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# *Information and Courses*

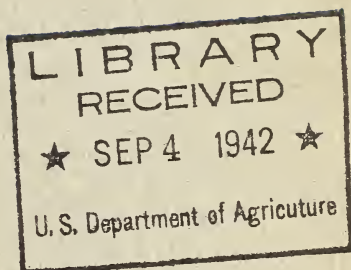
GRADUATE, UNDERGRADUATE AND NON-ACADEMIC

## *Fall Semester 1942-43*

BEGINNING SEPTEMBER 28



*Education and Training  
By and For Federal Employees*



UNITED STATES DEPARTMENT OF AGRICULTURE

## GRADUATE SCHOOL

# ADMINISTRATION

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JAMES F. GRADY, A.B. (*Department of Office Skills*) *Chief, Domestic Division, Recruitment and Manning Organization, War Shipping Administration; formerly Correspondence Counselor, Department of Agriculture*

\* Deceased.

BUSINESS OFFICE—ROOM 1031, SOUTH BUILDING

Hours—8:40 A.M. to 6:20 P.M. (1 P.M. Saturdays)

TELEPHONE—EXTENSION 5943

DEPARTMENT OF AGRICULTURE

Between 12th and 14th on Independence Avenue, S. W.

UNITED STATES  
DEPARTMENT OF AGRICULTURE  
GRADUATE SCHOOL

GRADUATE, UNDERGRADUATE, AND NON-ACADEMIC

*Opportunities for Continuation Study  
in the Federal Service*

*Fall Semester, 1942-43*

BULLETIN OF INFORMATION  
AND COURSES

WASHINGTON  
1942

*Fall Semester Begins September 28.*

*For complete registration information, see pages 6 to 8.*

*Mail registration forms  
will be supplied  
upon request*

# DEPARTMENT OF AGRICULTURE

## GRADUATE SCHOOL

### GENERAL INFORMATION

The Graduate School exists to stimulate and encourage post-entry education and to afford opportunities for the education and training of employees of the Department of Agriculture. Its courses are open, however, to all qualified Federal employees, for whom it constitutes a center of learning after official working hours. In fulfilling the purpose for which it was established by Secretary Henry C. Wallace in 1921, the School now offers a wide variety of courses ranging from elementary to the most advanced opportunities for continuation study, and sponsors each year one or more general lecture series in which nationally known authorities participate. Last year more than 5,000 individuals, representing all agencies of the Federal Government, were enrolled in these courses, exclusive of several hundreds who attended the general lectures.

The School operates in the conviction that study-experience and work-experience can be combined to the advantage of both, the work-experience accelerating and imparting meaning and motive to the learning process, and the study-experience improving and supplying understanding and competence to the work situation. It also operates in the conviction that, inasmuch as after-work activities and off-the-job environment have a vital relation to morale and performance on the job, the public interest is served by providing Federal employees with broad opportunities for continuation study along the lines of their *general* interests as *individuals* as well as their *special* interests as *employees*. Courses, as a result, range from the cultural to the vocational, without exclusive emphasis on either. They cover a wide variety of subjects for other reasons: because the interests and activities of the Department of Agriculture are extraordinarily broad and diversified, and because an effort has been made, in a few cases, to meet the needs of special groups of Federal employees, particularly in fields requiring war-training facilities.

### OBJECTIVES

In its 21 years of constant endeavor to meet the changing educational needs of Federal employees, the School has become a unique educational institution combining, in effect, a graduate school, an in-service training institute, and an adult education organization.

These three roles are implicit in the major objectives of the School:

1. To provide graduate education acceptable in graduate institutions for the convenience of employees who desire advanced degrees but find it difficult, both for personal and official reasons, to complete all study in residence at the degree-granting institution.

2. To supplement in-service training programs, conducted on government time and at government expense, by making it possible for employees to train themselves both intensively and extensively for proficiency in their present positions and for advancement to better positions.

3. To provide certain cultural, creative, and leisure-time opportunities for employees.

4. To assure the attainment of these objectives by making available to employees the experience, knowledge, and instructional talent of outstanding specialists in the Federal service.

## ROLE IN THE DEPARTMENT

The Graduate School makes a genuine contribution to morale and competence among employees of the Department of Agriculture; otherwise, there would be no reason for its continuation. Its contribution to progressive personnel administration is made by supplying opportunities to escape blind-alley positions, to prepare for promotions, to find creative after-hours outlets, to escape from office routines, to cultivate genuine interests, to gain self-improvement, to find intellectual challenges equal to one's capacity, to keep abreast of an entire field or series of fields of knowledge when the daily job may require knowledge of only one small segment of a single field, and to understand and appreciate relationships between one's own special task and the tasks of others. The relation of this program to Departmental management is recognized by Secretarial Memorandum, which names the Director of Personnel of the Department as *ex officio* chairman of the General Administration Board of the School.

The School also serves the Department in supplementing in-service training programs, elaborating upon them, and carrying on from where they leave off. Whereas training conducted on government time is likely to be confined to immediate needs and to knowledge and skills which will give fairly definite and tangible returns to the government, the Graduate School can and does offer training opportunities no less vital to the government but vital in a more indirect, long-run, and often intangible manner. It supplies oppor-

tunities which training officers, for financial and many other administrative reasons, are not able to make available at government expense and on government time. While the in-service training program gives primary, if not exclusive, attention to training needs as seen by management, the Graduate School can and does respond to the needs and desires of the employees, many of whom are seeking to prepare themselves for promotional opportunities entirely beyond the interest and jurisdiction of the training officers of the agencies in which the employees are located. By close cooperation between (1) official in-service training provided by the Office of Personnel and the bureaus and (2) semi-official after-hours training provided by the Graduate School, the training and educational program of the Department of Agriculture as a whole is made much more comprehensive, flexible, and responsive to the needs both of employees and of management.

### AUTHORITY

Facilities for study and research in the government departments are made available by Congressional authority to qualified individuals, students, and graduates of institutions of learning in the several states and the District of Columbia under such rules and restrictions as the heads of departments and bureaus may prescribe (Joint Res. April 12, 1892, 27 Stat. 395; Deficiency Act of March 3, 1901, 31 Stat. 1010, 1039). Under this authority and the provisions of the Organic Act of the Department, the Graduate School was organized in 1921 with the approval and encouragement of the Secretary of Agriculture.

### ADMINISTRATION

The School is a self-supporting, non-profit institution. It receives no Federal funds. Its government is vested in the General Administration Board, appointed by the Secretary of Agriculture. Its administration is vested in the Director, appointed by the Board, and a small administrative staff. These have the advisory assistance of the Director Emeritus and Educational Adviser and eight committees named by the Board, one for each of the major divisions of the School. Members of the Board and of the committees serve without compensation.

### FACULTY

Graduate School instructors are drawn almost entirely from the Federal service, a source of talent and expertness unexcelled any-

where in the nation. There is but one criterion for their selection—competence. Faculty members combine excellent academic training, college teaching experience, and daily practice in the application of the subject matter taught. The only exception to this pattern of qualifications is found in a few cases obviously requiring greater emphasis on technical experience than on academic background. For a brief note about each instructor, see the “Faculty” section.

## CERTIFIED STATEMENTS OF ACCOMPLISHMENT

In two fields, statistics and public administration, the Graduate School offers Certified Statements of Accomplishment upon the student's completion of a specified program of study. (For complete details see the Departments of Public Administration and Mathematics and Statistics.) These Statements are offered to encourage the student to complete a well-rounded approach to his chosen field of study and work, so that he may more competently discharge his present and prospective responsibilities as a public servant.

## WAR TRAINING

So far as physical facilities would permit, the Graduate School has organized classes to meet the special war training needs of Federal employees, particularly in those subjects representing critical shortages of trained personnel. After a careful study to determine the greatest needs, arrangements were made last spring to offer the most urgently needed instruction and to send the lists of students who successfully completed the courses to the United States Civil Service Commission, for use at the Commission's discretion in its placement and transfer programs. More than a thousand employees have enrolled in these courses in auditing and accounting procedure, position classification, war contracts, meteorology, statistical drafting, and shorthand. Many of those completing the courses have already been placed in positions which will enable them to make a greater contribution to the war effort.

Organization of courses of this type will continue as need arises and as facilities permit. Several of the courses previously called “war training courses” and many others designed to meet emergency needs are incorporated as an integral part of the program for 1942-43.

## LIBRARY FACILITIES

The Department of Agriculture Library, containing approximately half a million books, is open to Graduate School students from 8:00 a.m. to 8:00 p.m. Through that Library, the School also has ready and convenient access to unexcelled special libraries and to the Library of Congress.

## LIBRARY ASSISTANTSHIPS

A limited number of library assistantships are open to qualified students from the Department of Agriculture who wish to use this method of paying their fees. All work is done after official hours. Students interested should inquire at the School Office.

## LECTURES AND PUBLICATIONS

As usual, at least one lecture series dealing with a major current problem will be offered each semester this year. The detailed program will be made available by special announcement. Additional lectures will also be offered in continuation of the series on the general theme, "War Issues and Postwar Adjustment." Lectures given by outstanding financial authorities, in the class entitled "War and Postwar Problems of Finance," will also be open for general attendance.

Several of the lectures of previous years, and a few other valuable works, are available as Graduate School publications. (See list on inside back cover.

## REGISTRATION AND FEES

### *Fall Semester Begins September 28*

REGISTRATION. Registration should be made at the earliest opportunity in Room 1031, South Building, Department of Agriculture. The School Office will be open from 8:40 a.m. to 6:20 p.m. (1 p.m. on Saturdays). Registration should be completed before the semester opens on September 28.

LATE REGISTRATION FEE. Students who register after October 10 must pay an additional fee of \$1.00 a course. This does not apply to courses which begin after October 10 nor to persons who submit written evidence that official government action prevented their registration prior to that date.

FEES. The fee for each course is indicated in the course description. Unless otherwise stated, fees are computed at the rate of \$6.00 a credit hour for undergraduate courses marked L and U and \$7.00 a credit hour for graduate and the most advanced undergraduate courses marked G and GU.

PARTIAL PAYMENT PLAN. Arrangements may be made at the time of registration for paying in two installments, for which there will be an additional service charge of \$1.00 for each course. The first installment of not less than half the full fee, plus the \$1.00 service charge, must be paid at the time of registration. *The second and final installment must be paid on or before November 10.* Failure to pay will result in automatic suspension from class.

REFUNDS. Students withdrawing from classes will not be entitled to refunds, except that—

1. When a student is OFFICIALLY transferred out of the Washington area, his fees will be refunded in the amount proportionate to the unexpired portion of the semester, provided written evidence of such transfer is presented. This does not apply to cases arising out of the student's voluntary action.
2. When a student is granted permission to withdraw from a class during the first two weeks of the course, his fee, minus a \$3 registration charge, will be refunded.

Refunds are made on no other basis. All adjustments are made as of the date on which application for refund is received.

ROOM ASSIGNMENTS. Room assignments for classes may be obtained from the School Office after September 25 or from the Graduate School bulletin board outside Room 1031, South Building.

## CREDIT AND CERTIFICATION

**ACADEMIC CREDIT.** The United States Civil Service Commission accepts Graduate School credits, the same as credits from recognized colleges and universities, for examination and qualification purposes. Although courses are of standard college grade for the levels indicated, with the exception of a few non-credit courses given to meet special training needs of Federal employees, the School does not grant degrees and has never sought that authority. It prefers to cooperate with existing institutions having that function. Certifications of Graduate School work have been accepted for the past twenty years by many of the leading colleges and universities. Because of the unusual conditions under which the School operates, it has never asked, and never felt it necessary to ask, to be included on the lists of accrediting associations. For acceptance of its credits, it relies on the merits of its courses and on the reputation and recognized competence of its instructors. Methods, grades, and credits are considered meaningless unless they result in demonstrated knowledge, skills, and attitudes and in demonstrated ability to make effective application. Course requirements and comprehensive examinations for credit are planned accordingly.

**PLANNING YOUR PROGRAM.** During the period from September 21 to September 25 (after 5:30 p.m.), representatives of the major departments of the School will be available for consultation on courses and programs of study. Students who want credit certified to a college or university should, whenever possible, arrange their programs with the institution to which credits are to be sent. Graduate programs should be arranged in advance through the dean of the graduate school of the institution from which the degree is contemplated. The latest catalogs of colleges and universities are available for examination in the Graduate School Office. Officers of the School and instructors will be glad to assist students in planning programs.

**CERTIFICATION OF STUDENT'S RECORD.** Upon the student's request, an official certification bearing the seal of the Graduate School will be sent to him or to an educational institution or other organization designated by him. The fee for this service is 50 cents a copy prepaid. (Note: Students who desire certification of work done prior to the academic year 1941-42 must comply with certification rules in effect at the time the student was enrolled.)

**COOPERATION WITH THE AMERICAN UNIVERSITY.** The Graduate

School of the Department of Agriculture and the Graduate Division of the School of Social Sciences and Public Affairs of The American University have found it mutually advantageous to cooperate in certain portions of their graduate programs. Certain courses in each school which supplement courses in the other are offered cooperatively. Graduate School students who take such courses (preceded by an asterisk) are eligible for residence credit at The American University.

TRANSCRIPTS. Certification for academic credit will not be made until the student has secured from the schools attended a transcript of his academic work and filed it with the Graduate School. Students who enroll in courses given in cooperation with The American University and desire credit at American must file a transcript with that institution and otherwise comply with its rules.

### COURSE SYMBOLS

L—Lower division course

U—Upper division course

G—Graduate course

GU—Graduate and most advanced undergraduate course

N—Non-credit course

The numbers following these letters indicate credits and whether the course is a one-semester or full-year course. G-2 indicates a one-semester course of graduate level, offering two credits or two semester hours. G-2-2 means that the course is a full-year course offering two credits each semester.

# DEPARTMENT OF MATHEMATICS AND STATISTICS

## DEPARTMENTAL COMMITTEE

- W. EDWARDS DEMING, Ph.D., *Mathematical Adviser, Bureau of the Census (Chairman)*  
LOUIS BEAN, M.B.A., *Head Agricultural Economist, Bureau of Agricultural Economics*  
W. F. CALLANDER, LL.B., *Head Agricultural Statistician, In Charge, Division of Agricultural Statistics, Agricultural Marketing Administration*  
B. R. STAUBER, M.A., *Planning Officer, War Relocation Authority*  
O. C. STINE, Ph.D., *Chief, Division of Statistical and Historical Research, Bureau of Agricultural Economics*

## OPPORTUNITIES FOR STUDY AND WORK

To a greater extent than ever before, our country is dependent on the analysis of quantitative data. Action in the solution of problems in industrial and agricultural production requires prediction, which in turn requires skill in the collection, evaluation, and analysis of data, plus knowledge of the subject matter gained through studies of economics, sociology, engineering, or other branches of the natural and social sciences. In industry and in the government service, the demand for valid methods of prediction as a basis for action is placing more and more stringent requirements on statistical methods, as more and more is expected of public programs designed to stabilize or improve economic and social conditions. Making predictions and recommendations for action is the special business of the statistician.

The situation in Washington creates an unusual opportunity for students who wish to pursue studies in statistics. For years, Washington has more and more been becoming the center of many activities, political, economic, and scientific. To serve the public in these fields the government has brought in men of education and experience who by the nature of their daily duties must make predictions, recommend action, and face the consequences. They are daily faced with realities and responsibilities; they are daily solving problems that must be solved. The instructors in the Graduate School are drawn from such men.

Employment opportunities are greater now than ever before for people trained in the statistical aspects of various fields of subject matter. The demand ranges from the statistical clerk who may need training in only one or two basic courses, on up to the highest-grade professional statistician who must be thoroughly

# COURSES LEADING TO CERTIFIED STATEMENTS OF ACCOMPLISHMENT IN STATISTICS

*With Concentration in One of the Following Fields of Application*

PROCESSING OF DATA	SOCIAL SCIENCES	BIOLOGICAL AND PHYSICAL SCIENCES	DESIGN AND INTERPRETATION OF SAMPLING SURVEYS
<i>BASIC COURSES—Required of all candidates</i>			
L-2-2. Algebra for Statistics <i>A. George Carlton</i>	L-2-2. Algebra for Statistics <i>A. George Carlton</i>	L-2-2. Algebra for Statistics <i>A. George Carlton</i>	L-2-2. Algebra for Statistics <i>A. George Carlton</i>
L-2. Graphic Methods for Presenting Statistical Data <i>R. G. Hainsworth</i>	L-2. Trigonometry and Geometry for Statistics <i>A. George Carlton</i>	L-2. Trigonometry and Geometry for Statistics <i>A. George Carlton</i>	L-2. Trigonometry and Geometry for Statistics <i>A. George Carlton</i>
L-2-2. Introduction to Statistical Analysis <i>Drs. Solomon Kullback, Benjamin Tepping; Messrs. C. M. Purves, Sidney Wilcox, Joseph Steinberg</i>	L-2-2. Introduction to Statistical Analysis <i>Drs. Solomon Kullback, Benjamin Tepping; Messrs. C. M. Purves, Sidney Wilcox, Joseph Steinberg</i>	L-2 or 3. Introduction to Experimental Design <i>Dr. Otis A. Pope</i> or L-2-2. Introduction to Statistical Analysis <i>Drs. Solomon Kullback, Benjamin Tepping; Messrs. C. M. Purves, Sidney Wilcox, Joseph Steinberg</i>	L-2-2. Introduction to Statistical Analysis <i>Drs. Solomon Kullback, Benjamin Tepping; Messrs. C. M. Purves, Sidney Wilcox, Joseph Steinberg</i>
<i>SPECIALIZED COURSES—24 credits, selected from appropriate field of application, required of all candidates</i>			
U-2. Machine Tabulation <i>Milton Kaufman</i>	L-3-3. Calculus <i>Dr. E. J. Finan</i>	L-3-3. Calculus <i>Dr. E. J. Finan</i>	L-3-3. Calculus <i>Dr. E. J. Finan</i>
U-2. Advanced Study of Tabulating Equipment <i>Milton Kaufman</i>	G-2-2. Interpretation of Statistical Calculations <i>Alexander Sturges</i>	G-2 or 3. Design and Analysis of Complex Experiments <i>Dr. A. E. Brandt</i>	G-2 or 3. Design and Analysis of Complex Experiments <i>Dr. A. E. Brandt</i>
G-2. Planning of Statistical Inquiries <i>Dr. Philip M. Hauser</i>	G-2. Planning of Statistical Inquiries <i>Dr. Philip M. Hauser</i>	G-3. Quality Control <i>Dr. W. Edwards Deming</i>	G-2-2. Theory of Functions <i>Dr. C. Winston</i>
G-2. Office Procedures and Estimates <i>Dr. Philip M. Hauser</i>	G-2. Office Procedures and Estimates <i>Dr. Philip M. Hauser</i>	G-2-2. Interpretation of Statistical Calculations <i>Alexander Sturges</i>	G-3-3. Statistical Inference <i>Dr. W. Edwards Deming</i>
GU-2-2. Selected Statistical Problems <i>Dr. John H. Smith</i>	G-2. Sampling in Social and Economic Surveys <i>J. Stevens Stock and Lester R. Frankel</i> or G-2. Theory of Sampling <i>Jerome Cornfield and W. D. Evans</i>	G-3. Interpolation <i>Dr. W. Edwards Deming</i> or G-2. Statistics of Crop Estimating <i>Dr. A. E. Brandt</i>	G-2-2. Theory of Sample Surveys <i>Dr. William G. Madow and William Hurwitz</i>
G-2-2. Interpretation of Statistical Calculations <i>Alexander Sturges</i>	G-2-2. Population Statistics <i>Dr. Philip M. Hauser</i> or G-2-2. Statistical Analysis of Economic and Social Problems <i>Milton Friedman</i> or G-2-2. Statistics of Agricultural Economics <i>Dr. F. V. Waugh</i>	G-3-3. Statistical Inference <i>Dr. W. Edwards Deming</i>	G-2. Linear Algebra <i>M. A. Girshick</i>
G-2-2. Population Statistics <i>Dr. Philip M. Hauser</i>	G-2-2. Psychological and Educational Statistics	G-2-2. Statistical Methods for Research Workers <i>Dr. William G. Madow</i>	G-2-2. Multivariate Analysis <i>M. A. Girshick</i>
		G-3. Least Squares and Curve Fitting <i>Dr. W. Edwards Deming</i>	G-2. Analysis of Variance <i>M. A. Girshick</i>
			G-2-2. Modern Statistical Theories <i>Dr. Joseph Daly</i>

## ELECTIVE COURSES

- U-3. Higher Algebra—*Dr. E. J. Finan* (may be substituted for Linear Algebra as a prerequisite for Multivariate Analysis)
- U-2. Coordinate Geometry and Vectors—*Dr. Sebastian Littauer*
- U-1. Nomograms—*Eugene Rasor*
- GU-2-2. Advanced Calculus
- G-2-2. Differential Equations
- G-2-2. Theory of Infinite Processes—*Dr. C. Winston*
- G-1. Interpolation, Approximation, and Quadrature—*Dr. J. Shohat*
- G-2-2. Theory and Application of the Characteristic Function—*Dr. Solomon Kullback*



trained not only in some field of subject matter, but also in higher mathematics and advanced statistical courses. The courses offered in the Graduate School program are designed to afford training at all levels, from the most elementary to the most advanced, with applied courses in several fields of subject matter.

### CERTIFIED STATEMENTS OF ACCOMPLISHMENT

A Certified Statement of Accomplishment is offered in each of four fields of statistical study—fields representing areas of statistical preparation and application most useful in the public service. The required program in each field is outlined below. The student who *completes the basic courses and earns 24 credits in specialized courses listed in any column*, with substitutions only as specifically approved, is eligible to receive a Certificate Statement of Accomplishment bearing the official seal of the School and signed by the Director and the Chairman of the Department of Mathematics and Statistics. The Statement is not a diploma nor simply a transcript of credit, but it combines certain useful features of both. It is a certification that the student has completed a program of study which, in conjunction with his assumed training in a subject-matter field of application, prepares him for effective public service in a particular statistical field. Courses completed and the quality of accomplishment will be recorded on the back of the Statement, which may be used as a personal record of achievement or a public record of qualification.

### SUGGESTIONS FOR PROGRAMS OF STUDY

The study of statistics is the study of collecting and evaluating evidence, making predictions, and recommending action. Statistics does not exist as a science by itself; it is a tool, helpful to science. The principles of statistical inference are the same in all sciences, natural and social, but different problems and requirements do demand adjustment of statistical procedures to the individual situation. The courses offered below provide for training in general principles, and illustrations of specific application.

The fundamental requirement of a good statistician is that he know the subject matter of the field in which he is working. The channels of statistical study offered here will not by themselves produce a statistician. As statistical inference is only a tool for prediction in the natural and social sciences, the student of statistics who desires to obtain a certificate is expected to attain competence in some special field, such as economics, sociology, biology, agricul-

ture, or engineering. A certificate in statistics means that the student has completed the statistical part of his training, but it will be assumed, when the certificate is granted, that the student is otherwise qualified in the subject matter of a particular field.

Persons who do not intend to become professional statisticians but simply desire to learn the elements of statistics as a tool subject, or persons who desire to train for clerical-statistical positions, should, of course, ignore the requirements for a Certified Statement and concentrate on basic courses suited to their special needs.

Survey of Statistics is especially designed to meet the needs of statistical clerks and persons desiring to become statistical clerks.

The United States Civil Service Commission has set the following requirements for statisticians:

Junior grade—six semester hours of statistics

(Junior Agricultural Statisticians may have three hours of statistics and three hours of college algebra)

Assistant grade—six additional hours of graduate training in statistics (total of twelve hours)

Associate grade—six additional hours of graduate training in statistics (total of eighteen hours)

These are minima in statistical training and, it should be clearly understood, are required *in addition* to other requirements of general education, professional specialization, and experience.

## MATHEMATICS

### N-0. REVIEW OF COLLEGE MATHEMATICS

EMIL SCHELL

Tu 6-9 beginning Sept. 29. Alternate years. \$18.

A review course on the first-year college level. Algebra, trigonometry and analytic geometry, with emphasis on graphical methods of analysis, and with a brief introduction to calculus methods. Statistical applications will be used for illustration.

Prerequisite: Some college mathematics.

### L-1. MACHINE CALCULATION

DONALD W. GEESA

M 6-8 beginning Sept. 28. Spring semester also. \$9.

Simple operations on different kinds of calculators; treatment of decimal points; extraction of roots, cumulative moment processes with tape machines; short-cuts and checks; adaptation of formulas to machine calculation.

Prerequisite: High school algebra and statistical experience.

### L-3. COLLEGE ALGEBRA Spring semester.

HARRY J. WINSLOW

### L-2. ALGEBRA FOR STATISTICS

A. GEORGE CARLTON

M 6-8 beginning Sept. 28. \$12.

A course in college algebra, with special emphasis on topics that are useful in the theory and application of statistical methods.

Prerequisite: High school algebra; plane and solid geometry.

L-3. TRIGONOMETRY AND ANALYTIC GEOMETRY HARRY J. WINSLOW  
*Tu-Th 6-7:45 beginning Sept. 29. \$18.*

Definitions in trigonometry; identities; complex numbers; DeMoivre's theorem; trigonometric equations. The study of analytic geometry will include the line, conic sections, and some other plane curves, polar coordinates; families of curves with one or more parameters. Parametric equations of curves. Radial axis. Graphic solution of equations. Some three-dimensional geometry.

Prerequisite: College algebra.

L-2. TRIGONOMETRY AND GEOMETRY FOR STATISTICS

*Spring semester.*

A. GEORGE CARLTON

L-3. SPHERICAL TRIGONOMETRY

HARRY J. WINSLOW

*Tu-Th 8-9:30 beginning Sept. 29. \$18.*

A brief study of the spherical triangle, including Napier's rules of circular parts for right triangles. Applications to terrestrial and astronomical triangles. The coordinate systems in the terrestrial and celestial spheres. Use of gnomonic and Mercator charts for plotting courses of Great Circle sailing. Rhumb line sailing. Ageton's method for celestial navigation. Solution of the t,d,L triangle by Napier's rules. Applications of trigonometry to problems of piloting.

Prerequisite: Plane trigonometry.

L-3-3. CALCULUS

DR. E. J. FINAN

*W-F 6-7:30 beginning Sept. 30. \$18.*

First semester: Variables, functions, limits, continuity, divided differences, derivatives. Application of the derivative to geometry, physics, curve fitting, and analysis. Mean value theorem. The anti-derivative. Riemann integration.

Prerequisite: Algebra and trigonometry and analytic geometry.

U-3. HIGHER ALGEBRA *Fall, 1943-44. Alternate years.*

DR. E. J. FINAN

U-2. COORDINATE GEOMETRY AND VECTORS

DR. S. B. LITTAUER

*Spring, 1943-44. Alternate years.*

U-1. NOMOGRAMS *1943-44. Alternate years.*

EUGENE RASOR

GU-2-2. STATISTICAL MECHANICS AND KINETIC THEORY OF GASES

*Tu 8-10 beginning Sept. 29. \$14.*

DR. FERDINAND G. BRICKWEDDE

A study will be made of the principles and methods of statistical mechanics. The methods will be applied to phenomena explainable on the basis of a molecular structure. Greatest emphasis will be placed upon applications to gases (kinetic theory of gases). Physical bases for the laws of thermodynamics will be developed and the statistical concepts of temperature and entropy explained. The elements of quantum statistics will be discussed and applied to problems of general interest.

Prerequisite: Differential and integral calculus, college physics, and first courses in mechanics and thermodynamics.

GU-2-2. ADVANCED CALCULUS

DR. C. WINSTON

*1943-44. Alternate years.*

G-3. INTERPOLATION *1944-45.*

DR. W. EDWARDS DEMING

G-2-2. DIFFERENTIAL EQUATIONS

*1943-44. Every three years.*

## G-2. LINEAR ALGEBRA

M. A. GIRSHICK

*Spring semester. Alternate years.*

## G-2-2. THEORY OF INFINITE PROCESSES

DR. C. WINSTON

*W 8-10 beginning Sept. 30. \$14.*

Infinite aggregates, convergent and divergent sequences. Theory of the real variable. Differentiation; Riemann and Lebesgue integration. Power series, expansion of functions, series with variable terms, transformation and reversion of series. Continued fractions. Infinite determinants. History and applications.

Prerequisites: Advanced calculus; higher algebra also advised.

## G-2-2. THEORY OF FUNCTIONS

DR. C. WINSTON

*1944-45. Every four years.*

## STATISTICS

**OUTSIDE LECTURES.** The Graduate School has made a practice of bringing one or two outside leaders in statistical thinking to Washington annually. In the past, the following eminent authorities have lectured here: R. A. Fisher, John Wishart, Walter A. Shewhart, J. Neyman, Frank Yates, Harold Hotelling, and Harold Jeffreys. Some of these lectures are available in print; see the list of publications at the back.

**SEMINARS IN SAMPLING AND STATISTICAL INFERENCE.** Meetings are held approximately monthly under the direction of Dr. W. Edwards Deming. This is not a credit course, and no fee is charged; registration, however, is required. Applications should be sent in writing to the Director. Notices regarding meetings are mailed to those who register.

**INSTITUTE OF APPLIED STATISTICS (JULY 1943).** Plans are being made to hold a one-week series of conferences in applied statistics some time in July 1943. Teachers of statistical theory throughout the country will be invited to attend, provided the emergency permits. Lectures will be given by various government statisticians in the fields of economics, sociology, agriculture, and ordnance, in which they will explain their procedures and ways of surmounting practical and administrative difficulties. Discussions from the standpoint of necessary compromises between theory and practice will be provided after each lecture by noted local and visiting statisticians.

## L-2. GRAPHIC METHODS FOR PRESENTING STATISTICAL DATA

R. G. HAINSWORTH

*M 6-9 beginning Sept. 28. Spring semester also. \$12.*

Application of various classes, forms, and types of illustrations. Actual working examples in time series charts, frequency diagrams, graphic correlation charts, statistical maps, pictorial symbol charts, and other illustrative examples. Reduc-

tion, reproduction and color application to graphic mapping and charting. Lettering, short-cut methods, and standardization rules. In addition to the laboratory work in class, some work will be expected between classes.

Prerequisite: An introductory course in statistics, or experience to satisfy the instructor.

**L-2 or 3. INTRODUCTION TO EXPERIMENTAL DESIGN** DR. O. A. POPE  
*M 6-8 beginning Nov. 9 and ending in March. \$12 for 2 cr. \$18 for 3 cr.*

An additional seminar will be held once a week, time to be arranged, for consideration of special research problems; this seminar is optional, giving one additional credit to those who complete the assignments. The course is for students of the plant and animal sciences who wish an introduction to experimental designs and analyses. It is non-mathematical and is designed particularly as a forerunner to Design and Analysis of Complex Experiments. The topics are randomized blocks, Latin squares, factorial designs, and pseudo-factorial designs. There are no mathematical prerequisites.

**L-3. SURVEY OF STATISTICS** JOSEPH STEINBERG  
*Th 6:30-9:30 beginning Oct. 1. \$18.*

A non-mathematical course designed particularly to train statistical clerks in the statistical treatment of data in the fields of economics, sociology, and business. Algebra will be reviewed as required. Operations with symbols. The object of summarizing data by tabulation and the calculation of statistical measures. Lessons in table making, classification, distributions, and plotting statistical charts such as frequency charts, dot charts, scatter diagrams, time series, and control charts. Breaking data into subseries; significance. Computations and interpretation of statistical functions, such as means, median, mode, moments, dispersion, standard deviation, skewness, correlation. Business indexes. Trend analysis and curve fitting. Graphic analysis. The course will consist of lectures and supervised instruction in calculations and table making. There will be opportunities for learning short cuts by the use of charts, multiplication tables, logarithms, slide rule and other devices.

Prerequisite: High school algebra.

**L-2-2. ELEMENTARY STATISTICS** DR. ARCHIE BLAKE  
*Th 6-8 beginning Oct. 8. \$12.*

This is a non-mathematical elementary course designed for statistical workers who do not expect to take advanced courses but wish to become familiar with the more common statistical terms and formulas and wish to learn how to lay out the forms for machine calculations. Methods of checking calculations will be emphasized. The course will include the presentation of data and the results of calculations by tables and charts. The second semester will deal with the relation between two variables; association, correlation, and regression; some elementary aspects of sampling.

**L-2. INTRODUCTION TO STATISTICAL ANALYSIS—1st half**  
C. M. PURVES AND SIDNEY WILCOX  
*Th 6-9 beginning Oct 1. Also offered in spring by Dr. Benjamin Tepping. \$12.*

Designed for students of business and economics. The collection of economic and census data; the presentation of data in tables and graphs; different kinds of averages; measures and significances of dispersion; elementary principles of sampling; introduction to index numbers and time series. Attention will be given to the preparation of formulas for machine calculations. Part of the three-hour period is devoted to laboratory work.

Prerequisite: Algebra, trigonometry, and analytic geometry.

## L-2. INTRODUCTION TO STATISTICAL ANALYSIS—2d half

DR. BENJAMIN TEPPING

*M 8-10 beginning Sept. 28. Also offered in spring by Sidney Wilcox. \$12.*

This is a continuation of Introduction to Statistical Analysis (1st half). Problems in the relations between two or more variables. Association, correlation, and regression, leading into multiple and partial correlation. Introduction to statistical inference. Adaptation of formulas to machine correlation.

## U-1. MACHINE TABULATION

MILTON KAUFMAN

*W 7-9 beginning Sept. 30 at the office of the I.B.M., 1111 Connecticut Avenue. \$9. Spring semester also. Registration limited to 30.*

The punch card method. The functions of the principal machines. The instruction will cover the actual wiring of all types of I.B.M. tabulating equipment. The use of cards to obtain sums of squares and cross products in correlation and curve fitting will be demonstrated.

## U-1. ADVANCED STUDY OF TABULATING EQUIPMENT MILTON KAUFMAN

*F 7-9 beginning Oct. 2 at the office of the I.B.M., 1111 Connecticut Avenue. \$9.*

The solution of most difficult problems in the application of tabulating equipment. The instruction will include the actual operation and wiring of the principal machines involved.

Prerequisite: Machine Tabulation.

## GU-2-2. GRAPHIC CORRELATION

LOUIS BEAN

*1943-44. Alternate years.*

## G-2-2. STATISTICAL METHODS FOR RESEARCH WORKERS

DR. WILLIAM G. MADOW AND WILLIAM HURWITZ

*W 8-10 beginning Sept. 30. Alternate years. \$14.*

The course follows R. A. Fisher's book of the same title. Supplementary material will be introduced for comparison with other methods; also for dealing with time series, and the representative method in sampling. The treatment will be non-mathematical. Critical analysis and originality will be developed.

Prerequisite: Introduction to Statistical Analysis, 1st and 2d half; and familiarity with the subject matter of the text.

## G-2 or 3. DESIGN AND ANALYSIS OF COMPLEX EXPERIMENTS

DR. A. E. BRANDT

*Tu 8-10 beginning Nov. 17 and ending in March. \$14 for 2 cr. \$21 for 3 cr.*

The design of experiments, and the statistical analysis of the observations. The concept of independent comparisons or individual degrees of freedom. Randomized blocks, Latin squares, factorial and pseudo-factorial designs; confounding and partial confounding. A seminar supplementing the lecture will be held on Thursdays at 3 o'clock at which time specific problems of interest to class members will be discussed. One hour additional credit will be given to those who carry out the special reading and calculations to be advised. Opportunities will be provided in the use of more mathematics for those who are qualified.

Prerequisite: High school algebra and Introduction to Experimental Design.

## GU-2-2. SELECTED STATISTICAL PROBLEMS

DR. JOHN H. SMITH

*F 6-8 beginning Oct. 2. Alternate years. \$14.*

Applications of statistical methods in selected problems, involving wage studies, index numbers, administrative control of production, sample inspection in industry, time series and correlation.

Prerequisite: Introduction to Statistical Analysis, 1st and 2d half, or equivalent experience.

## G-2-2. INTERPRETATION OF STATISTICAL CALCULATIONS

*M 6-8 beginning Sept. 28. \$14.*

ALEXANDER STURGES

First semester. The philosophy and assumptions involved in statistical inference from sampling data. The conditions of sampling will be stated and compared with practical situations. The effect of failure to meet the ideal conditions will be studied. Methods will be offered for deciding whether the sampling conditions depart too far from the ideal.

Second semester. The selection and use of statistical tests. The illustrative problems will deal with single and multiple attributes. Time series will be discussed in the light of some new methods.

Prerequisite: Introduction to Statistical Analysis, 1st and 2nd half; college algebra, and analytic geometry.

## G-2-2. STATISTICAL ANALYSIS OF ECONOMIC AND SOCIAL PROBLEMS

MILTON FRIEDMAN

*Tu 8-10 beginning Sept. 29. \$14.*

Selected topics in the application of statistical methods to demand and cost curves, business cycles, income distribution, measurement of inflationary gaps, etc.

Prerequisite: Introduction to Statistical Analysis, 1st and 2d half; multiple correlation.

## G-2. PLANNING OF STATISTICAL INQUIRIES

DR. PHILIP M. HAUSER

*Tu 8-10 beginning Sept. 29. Alternate years. \$14.*

The design of schedules, definition of terms, preparation of instruction, estimating of costs, and plans of field organization for complete or sample social and economic survey.

## G-2. OFFICE PROCEDURES AND ESTIMATES

DR. PHILIP M. HAUSER

*Tu 8-10 beginning Feb. 2. Alternate years. \$14.*

## G-2-2. POPULATION STATISTICS

DR. PHILIP M. HAUSER

*1943-44. Alternate years.*

## G-3-3. STATISTICAL INFERENCE

DR. W. EDWARDS DEMING

*1943-44. Alternate years.*

## G-3. QUALITY CONTROL

DR. W. EDWARDS DEMING

*Fall, 1943-44. Alternate years.*

## G-3. LEAST SQUARES AND CURVE FITTING

DR. W. EDWARDS DEMING

*Spring, 1943-44. Alternate years.*

## G-3. THEORY OF SAMPLING

JEROME CORNFIELD AND W. D. EVANS

*Th 6-8 beginning Oct. 1. Alternate years. \$21.*

The planning of surveys to achieve maximum efficiency. The course is designed to provide general methods which may be applied to a large variety of sampling situations. Stratification; sampling units; sampling from finite population; double sampling; form of estimate; design of samples to minimize the error in estimating means, ratios, percentiles, distributions, regressions. Methods of evaluating the precision and bias of the results obtained.

Prerequisite: Calculus and Introduction to Statistical Analysis, 1st and 2d half.

## G-3-3. SAMPLING IN SOCIAL AND ECONOMIC SURVEYS

*Tu 6:15-9:15 beginning Sept. 29. \$21. J. STEVENS STOCK AND LESTER R. FRANKEL  
Spring semester also.*

Actual applications of the representative method to practical and timely

problems. Fallacies of the total count. Accuracy and precision. Problems involved in the selection of a sample. The theory of random sampling. The choice of sampling unit. Sub-sampling, stratified sampling, purposive selection. The use of intraclass correlation and analysis of variance in the design of sampling techniques. Analysis of cost data. Review of important sampling procedures as used in the United States and foreign countries.

Prerequisite: Introduction to Statistical Analysis, 1st and 2d half; and experience in social surveys.

#### G-2-2. THEORY OF SAMPLE SURVEYS

1943-44. *Alternate years.* DR. WILLIAM G. MADOW AND WILLIAM HURWITZ

#### G-2-2. MULTIVARIATE ANALYSIS

M. A. GIRSHICK

1943-44. *Alternate years.*

#### G-2-2. THEORY AND APPLICATION OF THE CHARACTERISTIC FUNCTION

1944-45. *Every three years.* DR. SOLOMON KULLBACK

#### G-2-2. MODERN STATISTICAL THEORIES

DR. JOSEPH DALY

1943-44. *Alternate years.*

#### N-0. STATISTICAL METHODS IN BIOLOGY AND AGRICULTURE

(CORRESPONDENCE COURSE FOR FIELD WORKERS)

DR. F. M. WADLEY

*Work may be commenced at any time unless the class is full; registration is limited. \$15.*

This course uses Snedecor's textbook *Statistical Methods*, and follows its outline largely but not absolutely. Each of the 15 lessons consists of a discussion, a textbook assignment, questions and problems. The reports are returned with corrections and comments. Subjects discussed include simple variation, regression and correlation, analysis of variance and covariance, chi-square, multiple and curvilinear correlation, applications to sampling and experimental design. Practical applications of methods is kept to the front. Facility in the use of arithmetic and simple algebra is necessary. Information furnished on application.

*Offered Cooperatively by American University*

#### GU-3. LABOR STATISTICS—A QUANTITATIVE APPROACH TO LABOR ECONOMICS

DR. JACOB PERLMAN

*Th 8:15-10:25 beginning Sept. 17. Audit \$24. Credit \$30.*

*See A.U. catalog, Stat. 463.*

#### GU-3. INDUSTRIAL SURVEYS

DR. LESTER KELLOGG

*M 8:15-10:25 beginning Sept. 21. Audit \$24. Credit \$30.*

*See A.U. catalog, Stat. 415.*

# DEPARTMENT OF PHYSICAL SCIENCES

## DEPARTMENTAL COMMITTEE

CHARLES E. KELLOGG, Ph.D., *Chief, Division of Soil Survey, Bureau of Plant Industry (Chairman)*

ARNOLD K. BALLS, Ph.D., *Head Chemist, Bureau of Agricultural Chemistry and Engineering*

IRVINE T. HAIG, Ph.D., *Chief, Division of Forest Management Research, Forest Service*

HAZEL K. STIEBELING, Ph.D., *Senior Food Economist, Bureau of Home Economics*

HARRY WEXLER, D.Sc., *Chief, Research and Training Section, Weather Bureau, Department of Commerce*

### U-2-2. HISTORY OF SCIENCE

DR. PAUL R. HEYL

*W 6-8 beginning Sept. 30. \$12.*

In this course the subject will be treated from the point of view that science is an organized and correlated body of knowledge, as distinguished from an uncorrelated accumulation of facts. In this sense, the history of science may be regarded as the history of the development of human thought. From this aspect the subject is one of considerable breadth.

A review will be given of the development of the principal branches of science—astronomy, physics, chemistry, geology, biology—showing that in each of these branches, considered broadly, the development has followed parallel lines laid down by the development of human thought. Attention will of course be given the leading figures and chief contributors in each of these branches. References will be made to related writings, particularly those of the early workers, because the development of a subject is more clearly shown in its early stages than later, when it has become more intricate and complex.

### L-3. NAVIGATION

JOHN T. LOKERSON

*F 6:30-9:30 beginning Oct. 2. \$18. (Materials and books will cost about \$6.) Limited to 15.*

This course is limited to the essential principles of practical navigation, "off soundings" (exclusive of inland and coastal piloting, which will be covered in a spring-semester course).

Dead Reckoning: This will include the definition, charts, plotting, records, allowance of errors of the magnetic and gyro compasses, ocean currents, and plane, mid-latitude, and Great Circle sailings.

Celestial Navigation: This will include the fundamental definitions and principles of astronomy underlying the navigation of ships and aircraft; the usage of the sextant and chronometer, time and the Nautical Almanac, corrections of observed altitudes, the determination of latitude and of position at sea by lines of position computed by H.O. 211 using G.H.A., and identification of unknown navigational stars.

Prerequisite: High-school trigonometry and logarithms.

### L-3. NAVIGATION (PILOTING) *Spring semester.*

## CHEMISTRY

### N-0-0. GENERAL (INORGANIC) CHEMISTRY

DR. L. A. GOLDBLATT

*F 6-8 beginning Oct. 2. \$12.*

An introductory survey course designed for students not specializing in chemistry but who desire a general knowledge of the subject. The aim of the course

is to give the student a better comprehension of the chemical aspects of our environment. The course will consist of a series of lectures covering the concepts, principles, facts, and applications of general chemistry. Some organic chemistry will be included. No individual laboratory work.

L-2-2. INTRODUCTION TO ORGANIC CHEMISTRY DR. E. P. CLARK

Th 6-8 beginning Oct. 1. \$12.

The fundamental principles of general organic chemistry. Such topics as classification, nomenclature, type reactions, and structure will be considered. Historically important discoveries will be correlated with the development of the subject, and emphasis will be placed upon the treatment of compounds or classes of compounds that are industrially, medically, or biologically important. The first semester will be devoted to the consideration of the aliphatic series; the second semester to the aromatic and heterocyclic series.

U-2-2. ADVANCED ORGANIC CHEMISTRY C. VERNE BOWEN

Tu 6-8 beginning Sept. 29. \$12.

In this course fundamental reactions will be reviewed and elaborated. Newer developments in aliphatic and aromatic chemistry will be presented and recent progress in the chemistry of sterols and vitamins will be given.

Prerequisite: One year general chemistry; one year organic.

U-2-2. PHYSICAL CHEMISTRY DR. WALTER J. HAMER

Tu 6-8 beginning Sept. 29. \$12.

Classification of matter; atomic and kinetic theories; atomic and molecular structure; solutions; the phase rule; chemical kinetics; thermochemistry and thermodynamics; flame and explosive temperatures; photochemistry; radioactive chemical changes; electrochemistry; conduction by electrolytes.

Prerequisite: One year general chemistry.

GU-2-2. PHYSIOLOGICAL CHEMISTRY DR. HERBERT O. CALVERY

W 6-8 beginning Sept. 30. \$14.

A lecture course on the principles of biochemistry. The course will deal with the chemistry of the proteins, fats, and carbohydrates; the general chemical composition of animal tissues, e.g., muscle, nerve, milk, and blood; a brief discussion of the enzymes of the gastro-intestinal tract; the digestion and absorption of the principal foodstuffs; metabolism of the proteins, fats, and carbohydrates; mineral metabolism; the chemical constituents of the urine; and finally a general discussion of the chemistry and physiology of the vitamins and hormones will conclude the course.

Prerequisites: One year general chemistry; one year organic.

G-2-2. ELECTROCHEMISTRY DR. WALTER J. HAMER

F 6-8 beginning Oct. 2. \$14.

A lecture course designed to present the fundamentals of electrochemistry. This course will deal with the conduction by electrolytes, transference numbers, the mechanism of galvanic cells, electrode potentials, potentiometric titrations, conductometric titrations, the polarograph, diffusion currents, electrokinetic phenomena including electrophoresis and electro-osmosis, ionization constants, pH or hydrogen ion activity, and passivity and overvoltage of electrodes. The factors involved in electroplating, electrodialysis, and electropolishing will be briefly studied.

Prerequisite: One year general chemistry. Calculus helpful but not required.

GLASS BLOWING (See MECHANICAL ARTS).

## GEOGRAPHY AND GEOLOGY

U-3. PHYSIOGRAPHY OF THE UNITED STATES DR. C. F. STEWART SHARPE  
*Tu-Th 6-7:30 beginning Sept. 29. \$18.*

As a basis for regional study, the term begins with a survey of general physiography. The materials and structures of the earth's surface and their behavior under the action of weathering, mass wastage, and erosion by running water, winds, waves, and moving ice are considered; and the development and classification of land forms is discussed. The physiographic provinces of the United States are then treated region by region and interpreted in the light of their geologic structure and physiographic history. Representative geologic, physiographic, and topographic maps are used for illustration. Regional differences in climate, vegetation, soil, water supply, and human activity are discussed briefly as they relate to land use in the various parts of the country.

U-1. GEOGRAPHY OF THE PACIFIC ISLANDS DR. F. F. RAYMOND FOSBERG  
*F 6-7 beginning Oct. 2. \$6.*

A brief introduction to the physical and economic geography of the Pacific area. Discussion will include the origin, geological history, and present geological features of the Pacific basin; the climate and vegetation; the historical sequence of peoples in the region in light of geography; economic geography by regions, including the eastern Pacific, Polynesia, Micronesia, Melanesia, Australia, Malaysia, Japan and the northwestern Pacific; the impact of European civilization on the Pacific, and its results. A fundamental purpose of the course will be to give a basis for an understanding of the present war in the Pacific.

GU-3. ECONOMIC GEOGRAPHY CLAYTON E. WHIPPLE  
*Tu-Th 6-7:30 beginning Sept. 29. \$21.*

A survey of man's occupation and utilization of the earth. Important occupations of mankind such as industry, forestry, fishing are studied as developed in the major geographic regions of the world. An important element is a survey of the major agricultural regions of the world and the part geographic environment has played in their development. The effects of geography on world trade and population are also considered in terms of the present dynamic world situation and the immediate post-war period.

G-2. OPTICAL MINERALOGY DR. EARL INGERSON  
*F at 6 in Geophysical Laboratory beginning Oct 2. Special fee \$15.*

One lecture and three laboratory hours a week; laboratory hours to be arranged. Optical properties of minerals. The behavior of light in crystals and crystalline aggregates; determination of optical constants of crystals and determination of unknown crystals from their optical properties. Minerals will be used both as known and unknowns, because complete tables are available for their identification. However, the immersion method is stressed, which is equally applicable to inorganic reagents and to organic compounds.

Prerequisite: Physics and mineralogy.

G-2. MICROSCOPICAL PETROGRAPHY DR. EARL INGERSON  
*Spring semester.*

## METALLURGY

U-2. PRINCIPLES OF PHYSICAL METALLURGY DR. VICTOR H. GOTTSCHALK  
*W 3-10 beginning Sept. 30. \$12.*

Development, meaning, and use of equilibrium diagrams for binary alloys. The iron-carbon diagrams and their relation to cast iron and steel, and to the

critical points important in heat-treating ferrous alloys. Steel-treating processes depending on non-equilibrium conditions, including the S-curve. The alloy steels. Aging and precipitation hardening. Segregation and other ingot defects. Mechanical and physical tests, including the interpretation of micrographs. Non-ferrous alloys of industrial importance.

#### GU-2. PRODUCTION METALLURGY

DR. BLAKE M. LORING

*M 6-8 beginning Oct. 5. \$14.*

The winning of metals from ores beginning with iron and steel. Blast furnace, open hearth, and Bessemer reactions. The influence of methods of manufacture on final properties. The non-ferrous metals including copper, lead, zinc, gold and some of the minor metals. The latest methods of concentration, roasting, smelting, refining, and electrolytic deposition will be considered. Chemical and physical principles as well as practices will be stressed.

#### GU-2. ADVANCED PHYSICAL METALLURGY

DR. BLAKE M. LORING

*Spring semester.*

### METEOROLOGY

With the growing importance of aircraft operations in military and civilian activities, meteorology is undergoing a rapid expansion. Before proceeding on his flight, the pilot must consult the meteorologist regarding upper air winds, cloud ceiling, threat of icing and thunderstorms, etc., along his route. Opportunities for employment of meteorologists have expanded greatly recently and it is expected that this tendency will continue in the future.

The course in Elementary Meteorology is intended for persons who desire a general outlook in meteorology and who are not interested in becoming professional meteorologists. The remaining courses outlined below are intended to give a fundamental and comprehensive meteorological background for persons interested in pursuing a career in meteorology. It is suggested that these courses be taken in the following order:

Physical and Synoptic Meteorology  
Climatology and Oceanography  
Weather Analysis and Forecasting  
Dynamic Meteorology

Elementary Statistical Analysis for Meteorologists will be found useful to professional meteorologists.

#### U-2. ELEMENTARY METEOROLOGY

GARRETT DE MOTS

*M 6-8 beginning Sept. 28. \$12.*

This course is intended for persons who desire a general outlook in meteorology. It is designed to meet the needs of persons who do not expect to become professionals but to whom a basic knowledge of meteorology is essential because of their daily relations with meteorology and meteorologists. The topics to be discussed include: history of meteorology, the sun and the seasons, cloud observa-

tions and interpretation, instruments and measurement of weather elements, structure of the atmosphere, general circulation and secondary circulations, description of the charts and diagrams used in preparing the forecast.

Prerequisite: High school diploma.

#### U-2-2. PHYSICAL AND SYNOPTIC METEOROLOGY

*Tu 6-8 beginning Sept. 29. \$12.*

INSTRUCTOR TO BE ANNOUNCED

This two-semester course is designed as a primary course for those interested in a career in meteorology. Among the topics covered will be: composition and structure of the atmosphere, adiabatic processes, general circulation, air masses and fronts, cyclones and anticyclones, fog, hurricanes, thunderstorms, weather forecasting.

Prerequisite: High school diploma with creditable grades in trigonometry and physics.

#### U-2. CLIMATOLOGY AND OCEANOGRAPHY

DR. WOODROW C. JACOBS

*W 6-8 beginning Sept. 30. \$12.*

AND DAVID I. BLUMENSTOCK

This course will stress particularly the aeronautical aspects of climatology and will include those portions of oceanography which have bearing on the atmosphere.

#### U-2. ADVANCED HYDROLOGY

FRANKLIN F. SNYDER

*F 6-8 beginning Oct. 2. \$12.*

A continuation of the elementary course in hydrology with further study of relations between rainfall and runoff and special emphasis on flood control and the flow of water in open channels.

Prerequisite: Elements of Hydrology or equivalent courses in hydraulics and meteorology.

#### GU-2-2. ELEMENTARY STATISTICAL ANALYSIS FOR METEOROLOGISTS

HERBERT C. S. THOM

*M-W 6-7 beginning Sept. 28. \$14.*

This two-semester course is designed especially for meteorologists and hydrologists. Emphasis will be placed on tests of significance and the exact understanding of definitions and terms. Some emphasis will also be given to the applications of statistical analysis and the limitations involved. Problems will, whenever possible, apply to the fields of meteorology and hydrology. Numerous references to the literature will be furnished for those who desire more elaborate mathematical discussions.

Prerequisite: College algebra or equivalent.

#### GU-3-3. WEATHER ANALYSIS AND FORECASTING

A. K. SHOWALTER AND C. H. PIERCE

*Tu-Th 6-8 beginning Sept. 29. \$21 plus \$3 laboratory fee.*

Lectures and laboratory. This two-semester course is the natural sequel to Physical and Synoptic Meteorology and will provide practical experience in the analysis of various weather charts of sea level and the upper air. Considerable practice will be given in preparing weather forecasts from various sea-level and upper-air charts and also from local surface and upper-air data alone.

Prerequisite: Physical and Synoptic Meteorology or permission of the instructor.

#### G-3-3. DYNAMIC METEOROLOGY

DR. HARRY WEXLER

*W-F 6-7:30 beginning Sept. 30. \$21.*

This two-semester course is designed especially for students with considerable

mathematical and meteorological background who wish to understand the working of the atmosphere and the physical background of modern methods used in weather analysis, forecasting, and research. Among the topics treated will be the following: thermodynamics of the atmosphere, hydrodynamics of the atmosphere, atmospheric turbulence, the general circulation, and applications to forecasting.

Prerequisite: Physical and Synoptic Meteorology or equivalent, calculus, or consent of instructor.

## PHYSICS

G-2-2. ANALYTICAL MECHANICS 1944-45.

DR. RICHARD K. COOK

GU-2-2. STATISTICAL MECHANICS AND KINETIC THEORY  
OF GASES

DR. FERDINAND G. BRICKWEDDE

(See MATHEMATICS for course description.)

GU-2-2. THERMODYNAMICS  
1943-44.

DR. FERDINAND G. BRICKWEDDE

## SOIL SCIENCE

U-2. SOIL CONSERVATION

DR. J. GORDON STEELE

F 6-8 beginning Oct 2. \$12.

The physical aspects of soil conservation problems. Extent, causes, and results of soil erosion. Physical capability of land for use. Soil-erosion control, including the need for a wide variety of technical practices and measures brought together in a farm conservation plan. Soil conservation research and operations in the main physical and agricultural regions of the United States.

U-3. SOIL FERTILITY

J. K. ABLEITER

W-F 6-7:30 beginning Sept. 30. \$18.

The factors that determine the fertility of the soil and its response to fertilization, liming, green manuring, and other practices are developed. Attention is given to the determination of fertilizer needs and the use of fertilizers in relation to soil conditions, crops grown, and the development of a management system on the individual farm. The properties and use of commercial fertilizer materials and mixtures are discussed.

GU-3. SOILS: THEIR MORPHOLOGY, GENESIS AND  
CLASSIFICATION

DR. CHARLES E. KELLOGG

Spring semester.

G-1. SOILS AND PLANNING—SEMINAR

DR. CHARLES E. KELLOGG

Spring semester.

# DEPARTMENT OF ENGINEERING AND MECHANICAL ARTS

## DEPARTMENTAL COMMITTEE

FRANCIS J. SETTE, M.S., *Head Business Specialist, War Production Board; former Deputy Administrator, Rural Electrification Administration*

REGINALD G. HAINSWORTH, M.A., *Head, Graphic Section, Bureau of Agricultural Economics*

T. W. NORCROSS, M.S., *Chief, Division of Engineering, Forest Service*

J. A. SCOTT, C.E., *Principal Construction Cost Analyst, Federal Public Housing Administration*

ROY STRYKER, A.B., *Chief, Historical Section, Division of Information, Farm Security Administration*

## ENGINEERING

### U-2-2. NAVAL ARCHITECTURE \*

CHARLES L. WRIGHT, JR.

*Tu 6-8 beginning Sept. 29. \$12.*

First semester: Determination of principal dimensions of a ship; development of ship lines; displacement and stability calculations; launching.

Second semester: Trochoidal wave theory; action of ships in waves; hull form and resistance; power; propulsion; steering.

### U-2-2. SHIP CONSTRUCTION \*

CHARLES L. WRIGHT, JR.

*Th 6-8 beginning Oct. 1. \$12.*

First semester: Shipyard organization; calculations of weight and strength of ships; riveted and welded construction; design of structural parts.

Second semester: Arrangement of machinery and fittings; piping, wiring, and ventilation; load line regulations, tonnage measurement, trial trips, dry docks.

### U-2. FUNDAMENTAL AERODYNAMICS

W. E. KONECZNY

*M 6-8 beginning Sept. 28. \$12.*

Fluid flow, wing theory, airfoil characteristics, wind tunnel tests, high lift devices, proportioning of aircraft, static and dynamic stability, and powerplant considerations. Lectures, discussions, and problems.

Prerequisite: Physics and an elementary knowledge of algebra and trigonometry.

### U-2. AIRPLANE STRESS ANALYSIS

W. E. KONECZNY

*W 6-8 beginning Sept. 30. \$12.*

This course will acquaint the student with the various parts of airplane structures and the means used for their analysis. A review of basic strength of materials, applied loads on an airplane, wings, fuselage, tail surfaces, landing gear, controls, fittings, standard methods of analysis, and static tests, lectures, discussions, and problems.

Prerequisite: Strength of materials.

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\* Note: Because of the interrelation of Naval Architecture and Ship Construction, it is suggested that they be taken together.

#### U-4. AIRCRAFT POWER PLANTS

JOHN W. BAIRD, *Chairman*

*Tu-Th 6-8 beginning Sept. 29. \$24.*

*Section on Engines: Tu 6-8 beginning Sept. 29. \$12.*

*Section on Installation and Propellers: Th 6-8 beginning Oct. 1. \$12.*

Students may register for the entire course or for one of the sections alone.

This course is offered through the cooperation and participation of a group of specialists from the Aircraft Engineering Division of the Civil Aeronautics Administration. The following will lecture on topics in which they have specialized:

1. John W. Baird, *Chief, Installation Unit*
2. Elmer J. Briggs, *Chief, Engine Unit*
3. E. Forrest Critchlow, *Chief, Vibration Control Unit*
4. Kenneth S. Cullom, *Fuels and Lubricants Specialist*
5. William A. Lusby, *Engine Specialist*
6. John C. Morse, *Chief, Propeller Unit*
7. David L. Posner, *Propeller Specialist*
8. E. J. Rudder, *Vibration Specialist*
9. Rudolph C. Schulte, *Installation Specialist*

**Engines:** internal combustion engine principles; modern aircraft engines, general design features, carburetion, ignition, lubrication, cooling, fuels and lubricants, engine performance and testing, typical engine failures.

**Installation and Propellers:** engine and propeller installations, fuel and oil systems, induction and exhaust systems, cooling and cowlings, power plant accessories and controls, principles and types of propeller design and construction; fixed and adjustable pitch, constant speed and feathering types; propeller and power plant performance, testing, and typical failures.

**Vibration** (divided between the two sections): general treatment of vibration theory, vibration problems related to aircraft power plant installations, vibration surveys, typical power plant vibration failures.

**Prerequisite:** Some background in internal combustion engines, mathematics, and mechanics.

#### GU-3. WATER POWER ENGINEERING (See UTILITY ADMINISTRATION)

#### G-2-2. ELECTRIC UTILITY ENGINEERING (See UTILITY ADMINISTRATION)

#### U-2. PRINCIPLES OF PHYSICAL METALLURGY—(See PHYSICAL SCIENCES)

#### G-2. PRODUCTION METALLURGY—(See PHYSICAL SCIENCES)

#### G-2-2. ANALYTICAL MECHANICS—(See PHYSICS)

### GRAPHIC PRESENTATION

#### L-2-2. ARCHITECTURAL DRAWING

GEORGE L. EDICK

*Tu-Th 6-8 beginning Sept. 29. Special fee \$20.*

Geometrical problems, orthographic projections, lettering, architectural symbols. Residence design, working drawings, details of construction, studies of modern methods of framing, and use of building materials.

#### L-2-2. MECHANICAL DRAWING

GEORGE L. EDICK

*Tu-Th 6-8 beginning Sept. 29. Special fee \$20.*

Geometrical problems, orthographic projections, intersections and developments, lettering, and study of material symbols. Studies in machine shop

practice, assembly and detail drawings, scale detail drawings from measured sketches by the student.

## L-2. FREEHAND DRAWING AND SKETCHING

WALTER G. CADMUS

*M-W 6-8 beginning Sept 28. Special fee \$15.*

A study of light and shadow, color and line. An intensive study of theory and harmony of color and composition from still life, and pictorial and outdoor sketching. The student may work with any medium such as pencil, colored pencil, charcoal, water colors, pastels, oils, etc. Each student will receive individual criticism. Open to both beginners and advanced students. Sketching only, two hours a week, Wed. (1 hr. cr.) from 6 to 8; fee \$10.

## L-2. GRAPHIC METHODS FOR PRESENTING STATISTICAL DATA

(See STATISTICS)

# MECHANICAL ARTS

## L-2-2. TECHNIQUE OF SHOP MANAGEMENT

SAMUEL L. HOLSTON

*M 6-8 beginning Sept. 28. \$12.*

Principles of shop and plant management particularly applicable in shops responsible for production and craft services. Consideration of delegation of authority, human relations and morale, machine-management, and cost-consciousness. Production controls; man-management, including work incentives, settlement of grievances, and promotions; work planning and order-schedule controls; quality controls; waste controls; cost controls and method of setting up a cost accounting system as an administrative tool and as a basis for charges.

## 2-2. GLASS BLOWING

LELAND B. CLARK

*M-W 6-7:30 beginning Sept. 28. Special fee \$18 including materials.*

This is a laboratory course for technicians. Simple manipulation of joining, bending, and shaping will be carried through to the production of useful apparatus. Metal in glass and glass to metal seals of all types will be made. During the first semester the soft glasses will be utilized for practice; during the second semester the related glasses will be used. Ample opportunity for advanced work will be given those who show themselves particularly adapted to the work.

## L-3. INTRODUCTION TO TEXTILE TECHNOLOGY

STANLEY A. SOKOLOFF

*M-W 8-9:30 beginning Sept. 28. \$18.*

The fundamentals of textiles from fiber to fabric. This course offers a basic technical background to persons without previous training, and a comprehensive review for those engaged in highly specialized work. It is intended to be particularly useful to coordinators of industrial activities, procurement officers, and textile inspectors. The subjects covered are: fibers, characteristics and identification; yarns and spinning; fabric design and weaving; dyestuffs and their application; finishing processes; testing; construction of typical fabrics; government specifications and trade standards. Emphasis is placed on cotton, wool and rayon, although other materials are discussed. The course is illustrated by actual samples. Students will analyze fabrics by use of ready methods.

## L-3. TEXTILE DESIGN AND DEVELOPMENT OF FABRICS

*Spring semester.*

STANLEY A. SOKOLOFF

## L-2. COTTON CLASSING

R. L. KAUSE

*Saturday, 1:30-4:30 beginning Oct. 3. \$12.*

This course, offered in cooperation with the Cotton Division of the Agricultural Marketing Administration, provides training in cotton classing through the study of grade, color, staple, and preparation.

## PHOTOGRAPHY

### U-2. BASIC PHOTOGRAPHY

CARL H. HANSON AND SPECIALISTS

*M 6-8 beginning Oct. 5. \$12.*

The course, elementary and basic in character, will be designed to meet the needs of the amateur. Text: War Department Technical Manual No. 1-219, *Basic Photography*. Topics covered: elementary photographic optics, selection and use of photographic lenses, cameras and shutters, films and plates, the photography of colored objects, exposure, elementary photographic chemistry, preparing solutions, darkroom conveniences and practices, developers and development, the technique of developing roll films, film packs and plates, the science and practice of printing, the camera in use, selection and arrangement of the subject, outdoor photography, enlarging papers, equipment and devices, how to make enlargements, finishing photographic prints, miniature camera photography, home portraiture, lighting and posing in portraiture, indoor photography, line work and copying, color photography, lantern slides.

## SURVEYING AND MAPPING

### L-4-4. SURVEYING

E. J. SCHLATTER

*Tu-Th 6-8 beginning Sept. 29. With equivalent of 30 hours of drafting-room and field work as weather permits. \$24.*

First Semester: General introductory study of the principles of plane surveying, including use of the tape, compass, transit, level, planetable, etc., together with principles of instrument adjustments. The course also covers instruction in field and office procedures, including lettering practices and note keeping.

Second Semester: Advanced classroom and field study of the methods of surveying applicable to topographic surveys, control for aerial photography, highway location, elementary geodetic surveys including triangulation, and cadastral surveys. The course also includes instruction in plotting from field notes and in the construction of polyconic and Lambert map projections.

Prerequisite: Trigonometry.

### U-3-3. AERIAL PHOTOGRAMMETRY

REYNOLD E. ASK

*M-W 6-8 beginning Sept. 28. Lecture, 2 hours a week; computation and drafting-room period, 2 hours a week. \$21.*

First Semester: Geometrical characteristics of aerial photographs, determination of tilt, photogrammetric optics, aerial cameras, flight planning, photographic materials, radial line methods, and mosaics.

Second Semester: Theory of stereoscopic plotting instruments including the stereocomparator, multiplex, aero-cartograph, stereo-planigraph, and the Brock process. Mapping from oblique photographs.

Prerequisite: First-semester Surveying and trigonometry.

# DEPARTMENT OF BIOLOGICAL SCIENCES

## DEPARTMENTAL COMMITTEE

HOWARD P. BARSS, M.S., *Principal Botanist and Experiment Station Administrator, Office of Experiment Stations (Chairman)*

P. N. ANNAND, Ph.D., *Chief, Bureau of Entomology and Plant Quarantine*

M. A. MCCALL, Ph.D., *Assistant Chief, Bureau of Plant Industry*

H. L. SHANTZ, Ph.D., *Chief, Division of Wildlife Management, Forest Service*

BENJAMIN SCHWARTZ, Ph.D., *Chief, Zoological Division, Bureau of Animal Industry*

### N-0. CRITICAL TROPICAL CROPS

DR. E. N. BRESSMAN, *Chairman*

M 6-8 beginning Oct. 5. \$14.

A series of lectures and conferences on critical tropical crops and products, including the following topics and leaders:

#### NATURAL RUBBER

Dr. Robert D. Rands, *Principal Pathologist, Rubber Plant Investigations, Bureau of Plant Industry.*

#### SYNTHETIC RUBBER

Dr. O. E. May, *Research Coordinator, Agricultural Research Administration.*

#### SUGAR

Dr. Elmer W. Brandes, *Head Pathologist in Charge, Sugar and Rubber Plant Investigations, Bureau of Plant Industry.*

#### INSECTICIDAL PLANTS AND QUININE

Benjamin Y. Morrison, *Principal Horticulturist; In Charge, Division of Plant Exploration and Introduction, Bureau of Plant Industry.*

#### OILS AND FATS

Dr. George S. Jamieson, *Senior Chemist, Agricultural Chemical Research Division, Bureau of Agricultural Chemistry and Engineering.*

#### FIBERS

Harry T. Edwards, *Senior Technologist, Bureau of Plant Industry.*

Others to be arranged.

The course is essentially non-technical but designed to be of benefit to persons interested in tropical and Latin American agriculture and also to persons who need a general understanding of these crops and the wartime problems concerning them. A special announcement regarding the course will be available after September 25.

### L-3-3. ELEMENTS OF NUTRITION

DR. ESTHER BATCHELDER, *Chairman*

Th-F 6-7:30 beginning Oct. 1. \$12.

This non-technical course, open to anyone interested in the subject, will be conducted by a number of specialists selected by Dr. Batchelder, who is Chief of the Foods and Nutrition Division of the Bureau of Home Economics. Among subjects covered will be the normal nutritional needs, the relation of food to health, and the planning of adequate dietaries for adults. Material presented will be of practical character, applicable in everyday home situations.

Primary instructional responsibility for the first semester will be assumed by Dr. Elsa Orent-Keiles.

## L-2-2. SYSTEMATIC BOTANY

DR. S. F. BLAKE

*M 6-8 beginning Sept. 28. \$12.*

This course is intended to give those with no previous experience in systematic botany an acquaintance with the elementary principles of the subject sufficient to enable them to use the ordinary manuals to advantage. The second semester will be devoted to the identification of wild plants of this region by the use of a manual. One or two short field trips will be held.

## U-2-2. HISTORY OF SCIENCE

DR. PAUL R. HEYL

*See description in the Department of Physical Sciences.*

## U-3. USEFUL PLANTS OF THE AMERICAN TROPICS

*M-W 6-7:30 beginning Sept. 28. \$18.*

DR. F. RAYMOND FOSBERG

An introductory course designed to acquaint the student with some of the plants of interest in Tropical America. Previous botanical training or experience in the American Tropics is not required. The aim of this course is to give the student a better comprehension of the relation of tropical plants to the economy of the people of Tropical America and to our own national welfare, special emphasis being placed on those plants the production of which is essential as a supplement to our own agriculture.

## U-3. LAND MANAGEMENT ECOLOGY

DR. EDWARD H. GRAHAM

*Tu-Th 6-7:30 beginning Sept. 29. \$18.*

A course in the application of ecological principles to major types of land use. Emphasis will be placed upon those fundamentals of both plant and animal ecology which apply to the management of land resources such as soil, crops, forests, range, and wildlife. The course is especially designed for those without extensive biological training who are interested in forestry, range management, wildlife management, and soil conservation and wish to obtain an ecological approach to the techniques of land management.

## GU-2-2. ADVANCED PLANT ECOLOGY

DR. M. B. WAITE

*W 6-9 for 10 weeks beginning Oct. 28. \$14.*

The first semester will give a general review of the fundamentals of plant ecology with special reference to agriculture and horticulture. The second semester will stress the ecology of plant diseases.

Prerequisite: General training in the plant science field. Principles of plant ecology helpful though not required.

## GU-2-2. PLANT BIOPHYSICS

DR. GLENN A. GREATHOUSE

*Th at Horticultural Station, Beltsville, Maryland. First class will be held at 5 p.m., Oct. 1, to arrange hours for convenience of class. \$14.*

A course for advanced students and investigators interested in the fundamental and practical applications of physical chemistry and physics to plant problems. The discussions will include the methods used to solve particular types of problems. The importance of modern physics and chemistry to plant research will be reviewed and elaborated. A general outline of the course may be obtained from the Graduate School Office.

Prerequisite: General knowledge of physics, chemistry, and botany.

## GU-2. PLANT PHYSIOLOGY 1943-44.

DR. GLENN A. GREATHOUSE

## GU-2. DISEASES OF WILDLIFE 1943-44.

DR. J. E. SHILLINGER

GU-2-2. MEDICAL AND VETERINARY ENTOMOLOGY DR. F. C. BISHOPP  
*Tu 6-8 beginning Sept. 29. \$14.*

A timely general course in medical entomology with emphasis on the practical aspects of this important field. The biology, habits, and relation to disease of insects, spiders, mites, and ticks, will be discussed. The way in which these arthropods affect man and animals as intermediate hosts, or carriers of disease-producing organisms, will be given attention and special consideration given to methods of control. The adaptation of known control procedures to present-day defense problems will be considered. Features of the course will include lectures by some of the outstanding specialists in this general field and round-table discussions of practical problems.

Prerequisite: Basic training in biology or consent of instructor.

# DEPARTMENT OF LANGUAGE AIDS

## DEPARTMENTAL COMMITTEE

HARRY B. HUMPHREY, Ph.D., *Principal Pathologist, Bureau of Plant Industry, and Editor, Phytopathology (Chairman)*

J. J. APODOCA, M.B.A., *Special Agent of the Rubber Research Company (temporarily assigned in Central America)*

GOVE HAMBIDGE, A.B., *author; Research Coordinator, Agricultural Research Administration*

M. C. MERRILL, Ph.D., *Chief, Division of Publications, Office of Information*

RALPH R. SHAW, M.S., *Department Librarian*

## ENGLISH

### L-2-2. COMPOSITION AND RHETORIC

DR. SUSAN E. HARMAN

*Th 6-8 beginning Oct. 1. \$12.*

Equivalent of first-quarter freshman English. An introductory course in writing and English usage, designed especially for those who need a course preparatory to more advanced English courses. Special attention will be given to the fundamental principles and mechanics of good writing—grammar, punctuation, spelling, etc.

### U-2. DESCRIPTIVE ENGLISH GRAMMAR

DR. SUSAN E. HARMAN

*M 6-8 beginning Sept. 28. \$12.*

A course in grammatical principles, stressing sentence structure and correct English form. Students are required to analyze sentences by diagram and to correct examples of bad English.

## LITERATURE

### U-2. INTRODUCTION TO SPANISH AMERICAN LITERATURE

*Th 6-8 beginning Oct. 1. \$12.*

DR. MADALINE W. NICHOLS

The general literary history of Spanish America, with intensive study of leading literary personalities and of their works. All lectures will be in English; reading may be done either in Spanish or in English translation.

### N-0. THE CLASSICS (See SPECIAL COURSES)

## SPEECH

### L-2. FUNDAMENTALS OF SPEECH

HESTER BEALL PROVENSEN

*Tu 6-8 beginning Sept. 29. \$12.*

A course to develop in the speaker the ability to communicate his ideas readily and effectively through the study of audience analysis, distinct utterance, outlining, word usage, enrichment of vocabulary, and voice production. Ample opportunity to speak. Individual criticism.

### L-2. EFFECTIVE SPEAKING

HESTER BEALL PROVENSEN

*Spring semester.*

### L-2. VOICE AND REMEDIAL SPEECH

RICHARD R. HUTCHESON

*Tu 6-8 beginning Sept. 29. Special fee \$15.*

Study and intensive drills in voice production, flexibility, range, articulation and enunciation. Training and practice are designed to improve vocal condi-

tions for all speech purposes and to remedy minor speech difficulties. In order that students may receive more individual attention, registration is limited to fifteen.

## N-0. PERSONAL DEVELOPMENT (See SPECIAL COURSES)

### WRITING AND EDITING

#### U-2. CREATIVE WRITING

DEWITT C. WING

*Th 6-8 beginning Oct. 1. \$12.*

This course is designed primarily to develop the student's inclinations in literary work through guidance, example, and practice. Emphasis is laid on facility of expression, skill in the use of words, and familiarity with the current media for reaching the reading public. The course presupposes a fundamental knowledge of composition.

#### U-3. EDITING

DR. M. C. MERRILL AND SPECIALISTS

*M-W 6-7:30 beginning Sept. 28. \$18. Limited to 40 students.*

This course is intended primarily for those seeking information on the editorial technique involved in handling manuscripts after they leave the author's hands and until they are issued in printed form. Discussion of the fundamental principles of editing, including the organization or rearrangement of material for effective presentation; rhetorical style in relation to subject matter; sentence structure and effective use of English; paragraphing and leads; consideration governing titles, tables of contents, headings, footnotes, illustrations, literature citations and bibliographies, and statistical checking; the principles of table formation and arrangement; typography and the relation of type to subject matter; and the fundamentals of indexing and proofreading. Practical examples of editorial work will be discussed in class. Opportunity for some familiarity with the style manual of the Government Printing Office will be provided. Collateral reading will be indicated. Those desiring credit for the course will be required to pass a written examination at the end of the semester. (May be deferred if necessary on account of war work.)

#### U-2. WRITING SPECIAL REPORTS

ARTHUR P. CHEW

*F 6-8:30 beginning Oct. 2. \$12.*

A discussion and practice course for scientific and professional employees who wish to improve their research reports, bulletins, and special articles. It will study how to organize and present facts and ideas so that readers may understand them, and will be attracted rather than repelled by the writing. It will not make a fetish of simplicity, which can be the foe of truth and value; but it will investigate techniques to keep scientific writing as simple as the subject matter allows. Order, continuity, tone, concreteness, precision, economy in the use of words, and other elements of scientific literary style will receive attention. Minor questions, such as those of grammar, sentence structure, and syntax, will be treated as they arise. Models and original writing will be criticised. Students will have time at each session to work under supervision on manuscripts of their own. Each student must complete one major writing project to receive credit for the course.

### DUTCH

#### L-2-2. ELEMENTARY DUTCH

HENRI A. KUYPER

*Th 6-8 beginning Oct. 1. \$12.*

Instruction in elements of Dutch grammar. Reading and translation of

articles from selected texts. This course is designed to give the student a thorough knowledge of the principles governing the correct use of the language.

## FRENCH

L-3-3. ELEMENTARY FRENCH  
*M-W 6-7:30 beginning Sept. 28. \$18.*

DR. HARRY B. HUMPHREY

Instruction in elements of French grammar. Reading and translation of elementary articles from selected texts. This course is designed to prepare beginners for the advanced courses in French.

U-3-3. ADVANCED FRENCH  
*Tu-Th 6-7:30 beginning Sept. 29. \$18.*

DR. HARRY B. HUMPHREY

N-0. CONVERSATIONAL FRENCH  
*W 6-8 beginning Sept. 30. \$12.*

MARY SABARTH

This course is designed to give facility in conversation and use of idiom; correct pronunciation; development of vocabulary in social and business dealings.

## GERMAN

L-3-3. ELEMENTARY GERMAN  
*M 6-9 beginning Sept. 28. \$18.*

DR. C. H. LEINEWEBER

Instruction in elements of German grammar. Reading and translation of elementary articles from selected texts. This course is designed to prepare beginners for the advanced course in German.

U-3-3. ADVANCED GERMAN  
*F 6-9 beginning Oct. 2. \$18.*

DR. C. H. LEINEWEBER

This course is intended to give the student a good reading knowledge of German. Besides Schiller's *Wilhelm Tell* and Goethe's *Hermann und Dorothea*, a number of contemporary short stories are read.

Prerequisite: Elementary German.

U-2-2. GERMAN TRANSLATION  
*W 6-8 beginning Sept. 30. \$12.*

IRA T. BRAUNSTEIN

Translation from German into English and English into German, including idiomatic German. The course will also be helpful to graduate students who intend to take reading examinations for advanced degrees.

## ITALIAN

L-3-3. ELEMENTARY ITALIAN  
*Th 6-9 beginning Oct. 1. \$18.*

NICHOLAS G. BARBELLA

The fundamentals of the language with practice in conversation and supplemented with graded readings.

U-3-3. ADVANCED ITALIAN  
*Tu 6-9 beginning Sept. 29. \$18.*

NICHOLAS G. BARBELLA

This course is designed to give facility in oral and written Italian; prepared and extempore conversations and discussions on current topics.

Prerequisite: Elementary Italian.

## PORTUGUESE

### L-3. FIRST SEMESTER PORTUGUESE

DR. RAUL D'ECA

*Tu-Th 6-7:30 beginning Sept. 29. \$18.*

The fundamentals of the language, elements of grammar, pronunciation, reading and translation of elementary materials.

### L-3. SECOND SEMESTER PORTUGUESE

DR. RAUL D'ECA

*Spring semester.*

### L-3. THIRD SEMESTER PORTUGUESE

DR. RAUL D'ECA

*Tu-Th 7:30-9 beginning Sept. 29. \$18.*

### L-3. FOURTH SEMESTER PORTUGUESE

DR. RAUL D'ECA

*Spring semester.*

## RUSSIAN

### L-3-3. ELEMENTARY RUSSIAN

GEORGE M. SAHAROV

*Tu 6-9 beginning Sept. 29. \$18.*

The fundamentals of the language for beginning students of Russian (first two hours). Reading and translation of elementary articles (third hour).

### L-3-3. INTERMEDIATE RUSSIAN

GEORGE M. SAHAROV

*W 6-9 beginning Sept. 30. \$18.*

Reading and translation of selected material. Sentence structure analysis and grammar review (first two hours). Practice in conversation (third hour).

## SPANISH

### L-2 or 3. FIRST SEMESTER SPANISH

RUBERTA M. OLDS, OLIVIA RUSSELL,

*Sec. I-3 cr. M 6-9 beginning Sept. 28. \$18.*

AND DR. MANUEL DE J. SAINZ

*Sec. II-2 cr. Tu 8-10 beginning Sept. 29. \$12.*

*Sec. III-2 cr. W 6-8 beginning Sept. 30. \$12.*

INDICATE CHOICE OF SECTION WHEN REGISTERING

Pronunciation, the use of idioms, building vocabulary, elements of grammar, simple conversation, and reading.

### L-2 or 3. SECOND SEMESTER SPANISH

DR. MADALINE W. NICHOLS

*Sec. I-3 cr. Tu 6-9 beginning Sept. 29. \$18.*

AND RAPHAEL DE HARO

*Sec. II-2 cr. F 6-8 beginning Oct. 2. \$12.*

INDICATE CHOICE OF SECTION WHEN REGISTERING

Continuation of first semester work.

### L-3. THIRD SEMESTER SPANISH.

RUBERTA M. OLDS

*Th 6-9 beginning Oct. 1. \$18.*

Short grammar review with practice in translations in Spanish and English, some free composition, conversation, intensive and extensive reading.

### L-3. FOURTH SEMESTER SPANISH

RUBERTA M. OLDS

*Spring semester.*

U-2-2. SPANISH CONVERSATION AND LITERATURE EDMUNDO LASSALLE  
*Th 6-8 beginning Oct. 1. \$12.*

A course designed to develop ability to understand and to converse in idiomatic Spanish, to translate articles in newspapers and magazines, to compose and translate social letters; free composition.

Prerequisite: Two years of Spanish or equivalent.

U-2. COMMERCIAL SPANISH 1943-44.

GU-2. LA AMERICA LATINA Y LOS ESTADOS UNIDOS (See POLITICAL SCIENCE).

U-2. MEXICAN CULTURE (See SPECIAL COURSES).

U-2. INTRODUCTION TO SPANISH AMERICAN LITERATURE (See LITERATURE).

N-0. SHORTHAND IN SPANISH (See OFFICE SKILLS).

# DEPARTMENT OF ECONOMICS AND SOCIAL SCIENCES

## DEPARTMENTAL COMMITTEE

CHARLES F. SARLE, Ph.D., *Executive Assistant for Scientific Services, Weather Bureau, Department of Commerce; formerly Director, Division of Economics, Commodity Credit Corporation (Chairman)*

ERIC ENGLUND, Ph.D., *Assistant Chief, Bureau of Agricultural Economics*

T. G. STITTS, Ph.D., *Chief, Cooperative Research and Service Division, Farm Credit Administration*

CARL C. TAYLOR, Ph.D., *Chief, Division of Farm Population and Rural Welfare, Bureau of Agricultural Economics*

M. L. WILSON, D.Sc., *Director, Extension Service, and former Under Secretary of Agriculture*

NOTE: Courses preceded by an asterisk (\*) are accepted by The American University for residence graduate credit.

## ECONOMICS

### U-3-3. PRINCIPLES OF ECONOMICS

DR. F. L. THOMSEN

*Tu-Th 6-7:30 beginning Sept. 29. \$18.*

An examination of the nature, validity, and significance of the "fundamental principles of economics." Designed to give the student the understanding of basic concepts necessary for advanced study in the field of economics and for the better understanding of materials dealt with in applied courses. The relation between economic theory and scientific methods. The organization of the economic system: production, consumption, exchange, and the distribution of income and wealth. The relation between economic institutions and so-called economic laws. What we know and do not know about the nature and causes of business cycles. International economic relations. Political economic "isms." Although the significance of basic principles will be interpreted in relation to current events and problems, the course is primarily designed to furnish an understanding of the scientific aspects of economics which have continuing application under changing world conditions.

### U-3. ECONOMIC WARFARE

DR. MAX J. WASSERMAN

*Tu-Th 6-7:30 beginning Sept. 29. \$18.*

This study of modern economic warfare will begin with an analysis of the circumstances which led to the present conflict; study in some detail the economic organization, defense and attack methods of the belligerents and their collaborators; examine the post-war economic plans for a durable peace. Lectures, class discussion, readings in a selected bibliography of the current literature on the subject.

### U-3. ELEMENTARY TRANSPORTATION ECONOMICS

ERNEST WILLIAMS

*Tu-Th 6-7:30 beginning Sept. 29. \$18.*

The course is designed to acquaint the student with the main facts about the transportation system of the United States, its significance, and its operation. Consideration will be given to the role of transportation in bridging the gap between production and consumption, and other facilities and services offered; rate making, theory and practice; classification and tariffs, shipping procedures and papers, and the organization and business methods of carriers. Throughout, attention will be given to the influence and importance of government regulations, particularly of rates and services.

### GU-3. PRINCIPLES AND PROBLEMS OF TRANSPORTATION

*Tu-Th 6-7:30 beginning Sept. 29. \$21.*

DR. RALPH L. DEWEY

A review of economic theories as they apply to transportation problems and to the alternative public policies that might be adopted to solve them. Emphasis will be placed upon issues which relate to such subjects as rates and rate structures; personal and local discriminations; entry into service; coordination and combination of carriers and modes of transportation; security issues and financial practices; holding companies; private carriers, contract carriers, common carriers, and freight forwarders; wages, hours, and working conditions; taxes and subsidies; relative economy and fitness of the various agencies of transportation; regulation of the competing means of transportation; and government ownership and operation of the railroads. Principles for guiding public policy will be formulated.

Prerequisite: Consent of instructor.

### GU-2. PRICE REGULATION

DR. HAROLD D. KOONTZ

*M 6-8 beginning Sept. 28. \$14.*

The economics of present price regulations. Attention will be given to the significance of price control and to the nature and problems involved in pre-war controls as they bear upon current wartime administration of prices. Emphasis will be placed upon conditions giving rise to price regulation, the policies employed, and the economic and administrative problems involved.

Prerequisite: Thorough foundation in economics.

### GU-3. PRINCIPLES OF INSURANCE

DR. VICTOR N. VALGREN

*Tu-Th 6-7:30 beginning Sept. 29. \$21.*

A survey of the field of insurance, including farm insurance. The major fields embrace life, fire, marine, crop, casualty and miscellaneous coverages, and social insurance. The subject matter includes the theory of insurance, the insurance contract, types of insurance carriers, rate making, loss adjustment, insurance reserves, State regulation and supervision. Stress is placed upon the economic and social implications of the subject.

### GU-2. RESEARCH METHODOLOGY IN ECONOMICS

*M 6-8 beginning Sept. 28. \$14.*

DR. MICHAEL T. WERMEL

This course is designed primarily for the economist and economic statistician who is engaged in economic and statistical research. The aim is to acquaint the students with the application of the basic principles of scientific method to concrete research problems and also with the art of preparing written reports embodying the results of their investigations.

### G-2. WAR AND POSTWAR FINANCIAL PROBLEMS

*F 6-8 beginning Oct. 2. \$14.*

DR. FRED L. GARLOCK, *Chairman*

This course consists of two parts: (1) a series of lectures by outstanding financial authorities, open for general attendance, and (2) a series of seminar meetings for further discussion of the lecture topics, open only to qualified students regularly enrolled in the course. Problems to be discussed will include, for example, the Atlantic Charter and its financial implications; Treasury needs, taxation, and borrowing; central banking measures to control inflation and aid postwar readjustment; price regulation and rationing; monetary stabilization and the use of gold; role of privately owned banking institutions and of governmental credit agencies in financing the war and postwar reconstruction; financial problems in postwar reconstruction of agriculture.

Among the lecturers already scheduled to participate are:

Adolf A. Berle, *Assistant Secretary of State*  
E. A. Goldenweiser, *Director of Research and Statistics, Board of  
Governors of the Federal Reserve System*

Cyril B. A. Upham, *Deputy Comptroller of the Currency*

Richard V. Gilbert, *Director of Research, Office of Price Administration*

Abner H. Ferguson, *Commissioner of the Federal Housing Administration*

Other lecturers and a complete schedule of dates and topics will be announced later.

The lectures will be given from 6 to 7 o'clock on alternate Fridays. From 7 to 8 o'clock following the lectures and from 6 to 8 o'clock on Fridays when no lectures are given, a discussion seminar will be held for those regularly enrolled in the course.

### *Offered Cooperatively by American University*

#### GU-3. MONEY AND BANKING

DR. FRITZ KARL MANN

*Tu 8:15-10:25 beginning Sept. 22. Audit \$24. Credit \$30.*

*See A.U. catalog, Econ. 410.*

#### GU-3. PUBLIC FINANCE AND TAXATION

DR. FRITZ KARL MANN

*F 6-8:10 beginning Sept. 18. Audit \$24. Credit \$30.*

*See A.U. catalog, Econ. 430.*

#### GU-3. OUTLINE OF LATIN AMERICAN ECONOMICS

DR. GEORGE WYTHE

*W 6-8:10 beginning Sept. 16. Audit \$24. Credit \$30.*

*See A.U. catalog, Econ. 470.*

#### GU-3. INTERNATIONAL ECONOMIC POLICIES AND PRACTICES

*Th 8:15-10:25 beginning Sept. 17. Audit \$24. Credit \$30.* DR. ADOLF DRUCKER

*See A.U. catalog, Econ. 473.*

#### GU-3. BUSINESS LAW

WALTER H. YOUNG

*Tu 6-8:10 beginning Sept. 22. Audit \$24. Credit \$30.*

*See A.U. catalog, Econ. 483-484.*

#### G-3. BUSINESS CYCLES AND MONETARY THEORY

DR. FRITZ KARL MANN

*Th 6-8:10 beginning Sept. 17. Audit \$24. Credit \$30.*

*See A.U. catalog, Econ. 512.*

#### G-3. CURRENT PROBLEMS IN INTERNATIONAL FINANCE

*M 6-8:10 beginning Sept. 21. Audit \$24. Credit \$30.*

DR. AMOS E. TAYLOR

*See A.U. catalog, Econ. 517.*

#### G-3. AIR TRANSPORTATION

DR. LUDWIG HOMBERGER

*M 8:15-10:25 beginning Sept. 21. Audit \$24. Credit \$30.*

*See A.U. catalog, Econ. 557.*

#### G-3. PROBLEMS IN THE POST-WAR WORLD

DR. GEORGE B. GALLOWAY

*M 8:15-10:25 beginning Sept. 21. Audit \$24. Credit \$30.*

*See A.U. catalog, Econ. 570.*

### AGRICULTURAL ECONOMICS

#### \*GU-3. SOCIAL AND ECONOMIC HISTORY OF AMERICAN AGRICULTURE

EVERETT E. EDWARDS

*Tu-Th 6-7:30 beginning Sept. 29. \$21.*

The geographical basis of American agriculture; agrarian settlement; land policies; the agricultural revolution, its elements and significance; history and

significance of farm implements and machinery; agricultural development by regions and commodities; transportation and marketing; agencies promoting agriculture, including individual leadership, societies, fairs, periodicals, State and Federal departments, education, and sciences; farmer movements; agriculture in recent times.

**\*GU-3. PRODUCTION ECONOMICS**  
*M-W 6-7:30 beginning Sept. 28. \$21.*

DR. SHERMAN E. JOHNSON AND  
DR. WYLIE D. GOODSELL

This course is planned as an introduction to the course in farm management to be offered in the second semester. It stresses the principles basic to the economic problems of production which are encountered in farm management, land economics, soil conservation, and similar fields. It is aimed at an understanding of the economic basis of agricultural production and the development of principles of production economics and farm accounting as useful tools in analysis of problems with which the student is concerned.

Prerequisite: Principles of Economics or its equivalent.

**\*GU-3. FARM MANAGEMENT**  
*Spring semester.*

DR. SHERMAN E. JOHNSON AND  
DR. WYLIE D. GOODSELL

**\*GU-2. CURRENT LAND POLICIES**  
*Tu 6-8 beginning Sept. 29. \$14.*

DR. V. WEBSTER JOHNSON

Discussion of current land problems and policies in the United States and various foreign countries; land use control programs; public land management policies; tenure reforms; government land programs to meet war problems.

**\*GU-3. LAND ECONOMICS** *Fall, 1943-44.*

DR. V. WEBSTER JOHNSON

**\*GU-3. SEMINAR IN LAND ECONOMICS RESEARCH**  
*Spring, 1943-44.*

DR. V. WEBSTER JOHNSON

**\*GU-3. AGRICULTURAL FINANCE**  
*W 7-10 beginning Sept. 30. \$21.*

DR. FRED L. GARLOCK  
AND DR. DONALD C. HORTON

The use of credit in different types of agriculture and the mechanism through which credit is supplied to farmers. This course will analyze the evolution of farmers' credit needs, farm credit institutions, the measures undertaken to reduce credit costs, and the relationship of the farm debt to changing conditions in agriculture. The role of credit to land-use planning and the rehabilitation of low-income farmers will be given special attention.

**\*GU-3. COTTON MARKETING** *1943-44.*

DR. JOHN W. WRIGHT

**L-2. COTTON CLASSING** (See MECHANICAL ARTS)

**\*G-2-2. PRINCIPLES OF AGRICULTURAL MARKETING**

*W 6-8 beginning Sept. 30. \$14.*

RICHARD O. BEEN AND SPECIALISTS

Emphasis will be on the application of economic and statistical theory to the analysis of problems in marketing farm products.

Prerequisite: General economic theory, and course work in marketing or a year's experience in research, teaching, or regulatory work in marketing.

**\*G-3. FORECASTING DEMAND FOR AGRICULTURAL PRODUCTS**  
*Fall, 1943-44.*

DR. F. L. THOMSEN

**\*G-3. AGRICULTURAL PRICE ANALYSIS**  
*Spring, 1943-44.*

DR. F. L. THOMSEN

## ECONOMIC THEORY

GU-3-3. HISTORY OF ECONOMIC THOUGHT DR. MAX J. WASSERMAN  
*M-W 6-7:30 beginning Sept. 28. \$21.*

An examination of the principal economic theories from Greek antiquity to the present time in the light of the institutions, customs, and practices which conditioned them.

\*G-3-3. ECONOMICS OF IMPERFECT COMPETITION  
*W 6:30-9 beginning Sept. 30. (18 weeks) \$21.* DR. MICHAEL T. WERMEL

This course will commence with a critical reexamination of basic premises underlying the traditional theory of price determination, as an introduction to an intensive study of newer theoretical techniques, developed recently, for the analysis of prices under conditions which fit neither assumptions of "perfect competition" nor of "pure monopoly" and which have been described as conditions of "monopolistic" or "imperfect" competition. In the second semester, the usefulness and applicability of this theoretical apparatus will be tested by a study of actual institutional practices, of price determination in specific markets in industries such as rubber tires, agricultural implements, drugs, meat packing, fertilizer, canning, etc., where admittedly neither "perfect competition" nor "pure monopoly" prevails.

*Offered Cooperatively by American University*

GU-3-3. ECONOMIC THEORY DR. HOWARD S. PIQUET  
*Th 8:15-10:25 beginning Sept. 17. Audit \$24. Credit \$30.*  
*See A.U. catalog, Econ. 401-402.*

This course is designed to aid in meeting the requirements of candidates for the master's degree in economics. Its companion course, Contemporary Economic Thought (see below), is somewhat more advanced.

G-3-3. CONTEMPORARY ECONOMIC THOUGHT DR. HOWARD S. PIQUET  
*Th 6-8:10 beginning Sept. 17. Audit \$24. Credit \$30.*  
*See A.U. catalog, Econ. 501-502.*

## LABOR ECONOMICS

\*GU-3. FARM LABOR PROBLEMS DR. WILLIAM T. HAM  
*Spring semester.*

\*GU-3. ORGANIZED LABOR AND THE LAW DR. DAVID ZISKIND  
*M 8-10:30 beginning Sept. 28. (18 weeks) \$21.*

This course is designed to develop an understanding of the functioning of law and government agencies in the field of labor relations. It will present an analysis of statutes and judicial decisions on the organization of trade unions, the incidents of union membership, collective bargaining, strikes and lockouts, picketing, boycotts, blacklists, conciliation and arbitration, and trade union responsibility. Attention will be given the administrative procedure of the National Labor Relations Board and the State labor relations boards.

GU-3. LABOR AND THE WAR PROGRAM DR. DAVID ZISKIND  
*W 8-10:30 beginning Sept. 30. (18 weeks) \$21.*

A study of the adjustments made in labor relations and labor standards during the last war and the present. Special attention will be given administrative

organization, production planning, conversion unemployment, recruitment and placement, job training, overtime hours, wage stabilization, safety practices, union participation, strikes, minority-groups employment and postwar labor programs.

**\*GU-3. LABOR AND SOCIAL LEGISLATION**

DR. DAVID ZISKIND

*Spring semester.*

**GU-3. SETTLEMENT OF LABOR DISPUTES**

DR. DAVID ZISKIND

*Spring semester.*

**POLITICAL SCIENCE**

**U-2. WORLD POLITICS**

DR. W. M. GEWEHR

*Th 6-8 beginning Oct. 1. \$12.*

A survey of world affairs and international relations. Such topics will be considered as the origins of the World War of 1914-18, the Versailles Conference and the treaties that brought no peace; revolutions in Germany and Russia; the conditions that gave rise to Mussolini and Hitler; the nature of Naziism, Fascism and Communism; the breakdown of the peace machinery; the war; basic issues in the Far Eastern situation; problems and prospects of Pan-Americanism.

**U-2. POLITICS AND CULTURE OF THE FAR EAST**

DR. W. M. GEWEHR

*Spring semester.*

**GU-3. CONGRESSIONAL PROCEDURE**

DR. FLOYD M. RIDDICK

*Tu 6-9 beginning Sept. 29. \$21.*

This course includes a comprehensive study of parliamentary procedure and party organizations and devices as recognized and utilized in the House and Senate of the United States Congress. General principles of parliamentary law as utilized by all deliberative bodies are reviewed. Consideration will be given all possible courses a bill might take and all possible ways of disposing of a bill from the time of introduction to passage or defeat.

**GU-2-2. LATIN AMERICA AND THE UNITED STATES**

*Th 8-10 beginning Oct. 1. \$14.*

PHILIP LEONARD GREEN

The first semester covers an analysis of the racial, geographic, economic and political forces that have shaped Latin American life, attitudes and personality; and a survey of the more important contributions of Latin Americans, in literature, art, music, social legislation and other spheres of human activity. The second semester embraces fundamental trends and influences that have militated for and against inter-American friendship, from earliest times to and including the Good Neighbor policy. It describes both official and non-governmental Pan American activities, presents problems and indicates opportunities facing the Americas today.

**GU-2-2. LA AMERICA LATINA Y LOS ESTADOS UNIDOS**

*M 8-10 beginning Sept. 28. \$14.*

PHILIP LEONARD GREEN

*Lectures and discussions in Spanish.*

This course aims to provide an opportunity to achieve greater facility in Spanish, while acquiring useful and interesting information on the life of Latin American countries and their relations with us. The subject material, though substantially similar to that of the English course entitled "Latin America and the United States" (see above), is presented in a somewhat different manner. Stress is placed on the guided use of materials in Spanish, preferably those originating in Spanish-American countries. Attention is given to linguistic

divergencies among the various countries, an adequate understanding of which can only be imparted to students who are sufficiently advanced to follow lectures in Spanish. Therefore, registration in this course is limited to those who have had the requisite instruction and practice in this language. Those who are in doubt as to their adequacy in this regard are advised to confer with the instructor before registering.

## PUBLIC LAW

GU-2-2. ADMINISTRATIVE LAW AND PROCEDURE (See PUBLIC ADMINISTRATION)

\*GU-2. LAYMAN'S INTRODUCTION TO PUBLIC LAW (See PUBLIC ADMINISTRATION)

\*GU-3. ORGANIZED LABOR AND THE LAW (See LABOR ECONOMICS)

## SOCIOLOGY

\*GU-3. THE EVOLUTION OF AMERICAN RURAL LIFE

*M 6-9 beginning Sept. 28. \$21.* DR. CONRAD TAEUBER AND DR. ARTHUR RAPER

The evolution of rural society in the United States; characteristics and attitudes of rural people; settlement patterns; regional and cultural groups in rural society; the contributions to rural culture of types of farming, nationality, and ethnic groups; rural-urban differences and the interaction of rural and urban cultural patterns.

\*GU-2-2. REGIONAL SOCIAL STRUCTURE OF THE AMERICAS

*M 6-8 beginning Nov. 2. \$14.*

DR. CHARLES P. LOOMIS

Same material used in course taught by Dr. Loomis at Harvard University last year. The rural and urban cultures in the Latin American countries will be compared with that of Anglo-America. Special attention will be given to the differences in class structure, attitudes, or value orientations of the populations of the nations and their various ethnic and other groups. Attention will be given to the underlying causes of tensions and antagonisms as well as cooperative sentiments existing between countries and among groups within the various countries. Throughout the course the reciprocal influence of geographical and cultural factors in the various countries will be discussed. All required reading in English. Suggested Spanish and Portuguese bibliography.

\*GU-3. CULTURAL REGIONS OF THE UNITED STATES

*1943-44.*

DR. CARL C. TAYLOR

GU-3. RURAL POPULATION TRENDS *1943-44.*

DR. CONRAD TAEUBER

\*GU-2. RURAL COMMUNITY ORGANIZATION

*1943-44.*

DR. CHARLES P. LOOMIS  
AND DR. DOUGLAS ENSMINGER

\*GU-3. CONTEMPORARY SOCIAL THEORY

*1943-44.*

DR. CHARLES P. LOOMIS

\*GU-2. SOCIAL PSYCHOLOGY *Spring semester.*

\*G-3. RURAL SOCIAL PSYCHOLOGY *1943-44.*

DR. CARL C. TAYLOR

## \*G-2. SEMINAR ON FARMERS IN A CHANGING WORLD

W 6-8 beginning Sept. 30. \$14.

DR. CONRAD TAEUBER, *Chairman*

Seminar meetings with members of the U. S. Department of Agriculture staff to survey current changes and prospective future developments. Discussions will include such topics as: (Unless otherwise specified, lecturers are from the Bureau of Agricultural Economics.)

### HOW WAR AFFECTS THE VARIOUS SOCIAL AND ECONOMIC

#### GROUPS IN AGRICULTURE

Dr. Arthur Raper, *Senior Social Science Analyst, Division of Farm Population and Rural Welfare*

### USE OF FARM LABOR AND THE RELATION OF FARM LABORERS TO OTHER GROUPS IN AGRICULTURE

Raymond C. Smith, *Chief Program Analyst*

### MOBILIZING THE RURAL COMMUNITY FOR WARTIME PROGRAMS

Dr. M. L. Wilson, *Director, Extension Service*

### WARTIME POPULATION SHIFTS AND THE PROSPECTS FOR POST-WAR SHIFTS

Dr. Conrad Taeuber, *Acting Head, Division of Farm Population and Rural Welfare*

### MANPOWER REQUIREMENTS FOR WARTIME AGRICULTURE AND THE POSSIBILITY OF ABSORBING ADDITIONAL POPULATION AFTER THE WAR

Dr. O. E. Baker, *Senior Social Scientist, Division of Farm Population and Rural Welfare*

### WARTIME TECHNOLOGICAL CHANGES AND THEIR PROBABLE FUTURE EFFECTS

Dr. Sherman E. Johnson, *Head, Division of Farm Management and Costs*

### THE OUTLOOK FOR LOW INCOME FARM FAMILIES

James G. Maddox, *Director, Program and Reports Division, Farm Security Administration*

### WARTIME PRICE CONTROLS AND THEIR LONG-RUN EFFECTS

Norman J. Wall, *Head, Agricultural Finance Division*

### CHANGES IN LEVELS AND STANDARDS OF LIVING

Dr. C. P. Loomis, *Senior Social Scientist, Division of Farm Population and Rural Welfare*

### CHANGING ATTITUDES OF FARMERS

Dr. Rensis Likert, *Head, Division of Program Surveys*

Each student will be expected to select a related topic and prepare a comprehensive report on it for presentation to the group.

Prerequisite: Consent of chairman of course.

*Offered Cooperatively by American University*

## GU-3. INTRODUCTION TO SOCIAL SECURITY

DR. OSCAR WEIGERT

M 6-8:10 beginning Sept. 21. Audit \$24. Credit \$30.

See A.U. catalog, Soc. Ec. 421.

## GU-3. ECONOMIC AND SOCIAL PROBLEMS OF HOUSING

Tu 8:15-10:25 beginning Sept. 22. Audit \$24. Credit \$30.

DR. KARL PRIBRAM

See A.U. catalog, Soc. Ec. 441.

GU-3. THE CONSUMER AND HIS INCOME

DR. FAITH M. WILLIAMS

*M 8:15-10:25 beginning Sept. 21. Audit \$24. Credit \$30.  
See A.U. catalog, Soc. Ec. 425.*

U-3. EARLY SOCIAL THOUGHT

DR. ERNST CORRELL

*M 8:15-10:25 beginning Sept. 21. Audit \$24. Credit \$30.  
See A.U. catalog, Soc. Sc. 507.*

# DEPARTMENT OF PUBLIC ADMINISTRATION

## DEPARTMENTAL COMMITTEE

LEON O. WOLCOTT, Ph.B., LL.B., *Assistant Director, Office for Agricultural War Relations (Chairman)*

JOHN R. FLEMING, B.S., *Chief, Bureau of Publications and Graphics, Office of War Information*

PETER KEPLINGER, M.S.F., *Staff Assistant in Administrative Management, Forest Service*

VERNE B. LEWIS, B.Ed., *Budget and Planning Officer, Division of Foreign Funds, Treasury Department*

JOHN THURSTON, Ph.D., *Administrative Council, Department of Agriculture*

## OPPORTUNITIES FOR STUDY AND WORK

The modern state truly is as its officers are. Competence of personnel, especially managerial personnel, is an urgent present need and an obvious post-war imperative. Assuring and adding to that competence is the sole objective of the Graduate School.

The importance of public administration is apparent in the modern state with its emphasis on services, control, operation, and collective action in the public interest. The more the public service is called upon to assume functions previously exercised by individuals or private enterprise, the greater the importance of the principles and techniques of public administration. The unprecedented and increasing delegation of discretion to administrative agencies has raised unprecedented problems of organization, public consent, and administrative responsibility.

Washington is of necessity the national focal point of all these developments. Many of the ablest and most experienced public administrators are of necessity assembled in Washington. Many of the most competent practitioners of the various specialized branches of administration are likewise concentrated in Washington. Utilizing this unique environment and this unexcelled talent, the Graduate School offers courses geared to demonstrated needs and taught by experienced administrative personnel.

Management problems raised by the war, and aggravated by leave of administrative personnel for military duty, have created an unparalleled demand for trained men and women in all branches of administrative management. The situation has resulted in recruitment of persons from private industry, appointment of persons not so well trained and experienced as in normal times, and the promotion in some cases of meagerly trained personnel at an unusual rate. The demand for good administrative personnel has become so critical that some agencies have felt compelled to

take special measures, in the interest of efficiency, to prevent the loss of such personnel through transfers. This is obviously not a normal situation, but it nevertheless illustrates the critical need for more and better training in public administration, particularly in the junior and assistant positions, even in normal times.

### SUGGESTIONS FOR PROGRAM OF STUDY

The following courses cover a wide range of approaches for varying levels of responsibility. Some give background and attitude, and some give methods and skill. Some have their objectives high and broad for perspective and knowledge of relationships; some have their objectives comparatively narrow and sharply focused for skill and ability to perform particular tasks. It is hoped that employees will select those courses which supplement and complement their work assignments rather than concentrate exclusively on more intensive training in the performance of daily tasks.

*General.* Persons who have not had such a course or had varied administrative experience should begin with Introduction to Public Administration. This course should precede courses in special branches of administration (e.g., personnel or financial administration) in order that such courses may be of maximum usefulness.

*Personnel Administration.* Unless substantial experience can be substituted, the general course, Personnel Administration, should be taken before the specialized courses (such as Position Classification, Selection and Placement, etc.). Persons who are in grade CAF-5 or below and desire to prepare for personnel work should take Personnel Procedure at the earliest opportunity; they should not attempt to take the specialized courses until they have gained substantial experience in personnel work or have carefully laid a foundation by completing all basic, general courses.

*Financial Administration and Purchasing.* Budget Formulation logically precedes Budget Execution. In purchasing, students qualified to work toward the program for a Certified Statement of Accomplishment in Public Administration should take Governmental Purchasing. It is desirable for other students to take Purchasing Procedure first.

*Accounting and Auditing.* Students in grades below CAF-5 will find it advantageous to begin with Federal Accounting Procedure or Federal Auditing Procedure. Preparation for higher-level ac-

counting should begin with a year's study of Principles of Accounting, after the completion of which Governmental Accounting may be taken. Second Year Accounting, Cost Accounting, and Auditing provide advanced training for those who desire to progress further with a general accountancy program.

## CERTIFIED STATEMENTS OF ACCOMPLISHMENT

A Certified Statement of Accomplishment is offered in each of two fields of concentration—fields representing areas of preparation and application most useful in the public service. The student who completes either program outlined below is eligible to receive a Certified Statement of Accomplishment bearing the official seal of the School and signed by the Director of the School and by the Chairman of the Department of Public Administration. The Statement is not merely a diploma-like certificate nor simply a transcript of credit, but combines certain features of both. It is a certification that the student has completed a well-rounded course of study preparatory for effective public service in administrative procedures or public administration. Courses completed and quality of accomplishment will be recorded on the back of the Statement, which may be used as a personal record of achievement or a public record of qualification.

Certified Statements of Accomplishment are offered in the two fields described below.

### I. PUBLIC ADMINISTRATION

#### *Approach*

Broad-gauge, essentially long-range approach to develop leadership, perspective, broad outlook, and understanding of the human factors in administration; emphasis on principles, with opportunity for study of some techniques in relation to policy.

#### *Objectives*

Ultimately, for policy formulation, improvement of administrative machinery, coordination of operations, and general management and control of large units. Immediately, for initial investigations as a junior member of a staff having the responsibilities named above, for assumption of increasingly difficult and more responsible assignments in these fields, and for supervision and management of small units.

#### *Requirements*

1. Bachelor's degree or equivalent (Note: This requirement

may be waived in the case of well-qualified students who have received a Certified Statement of Accomplishment in Administrative Procedures.)

2. Sixteen semester hours of credit in Graduate School courses in public administration, with at least four credits in each of the following fields:
  - a. General Administration (courses in introductory public administration, supervision, scientific management, organization, administrative law, public relations, management psychology, etc.)
  - b. Personnel Administration (courses in introductory personnel administration, position classification, selection and placement, counseling, training, employee relations, etc.)
  - c. Financial Administration (budget formulation, budget execution, governmental purchasing, governmental accounting, etc.)

## II. ADMINISTRATIVE PROCEDURES

### *Approach*

Emphasis on techniques, procedures, methods, but with an attempt to understand and use these means in terms of administrative ends or objectives.

### *Objectives*

Ultimately, for responsible conduct of important "housekeeping" operations of specialized character, direction of small units, performance of most difficult and responsible tasks in the procedural aspects of administration, and the settlement of questions of intermediate importance arising out of current or contemplated operations and not covered by existing regulations or decisions.

Immediately, for effective service in some administrative procedure at the clerical or semi-clerical level, as a means of entrance into the line of promotion leading to the responsibilities named above. (Students already at this level may arrange programs in conformity with their needs.)

### *Requirements*

1. High school diploma or equivalent.
2. Sixteen semester hours of credit selected from the following Graduate School courses:
  - a. All those offered in the Department of Public Administration (excluding all accounting courses except Govern-

mental Accounting). A minimum of eight credits must be selected from this group.

b. The following offered in the Department of Office Skills:

- (1) Purchasing Procedure
- (2) Federal Auditing Procedure or Auditing Procedure
- (3) Federal Accounting Procedure
- (4) Personnel Procedure
- (5) Office Management
- (6) Communications and Records Management
- (7) Government Letter Writing (2 credits only)

c. A course in elementary statistics (3 credits)

The program leading to a Certified Statement of Accomplishment in Public Administration should be of special interest to

1. Persons already employed in responsible administrative positions. Included in this group are many with specialized training who have been transferred to administrative positions from professional positions without training or previous experience in administration.
2. Junior Administrative Assistants and junior administrative technicians of all kinds.
3. Recently recruited Junior Professional Assistants. Those who entered the service with a public administration option may profit from courses both more advanced and more specialized than those taken in college. Those who entered on various professional options and are now employed in such professions can profit very greatly from these courses if they expect, or wish to prepare, to enter into administrative work connected with their professional fields.
4. Employees who wish to broaden their understanding and improve their efficiency through a "tour of duty" by study, in lieu of an actual tour of duty for which they have found no opportunity.
5. Employees with college background who aspire to transfer to a career in administrative management.

The program leading to a Certified Statement of Accomplishment in Administrative Procedures should be of special interest to

1. Persons already employed in administrative work of the procedural type, emphasizing techniques and skills.
2. Employees who aspire to enter administrative work but who, because of lack of college education, find their opportunities in that field greatly limited except at the procedural level.

This program of courses is useful for persons with good native ability but limited educational background, because it prepares them for a level of work most likely to be open to them. After they have succeeded in getting into administrative work, perhaps even at the clerical-administrative level, they can then combine their work-experience and study-experience to mutual advantage as progress is made toward greater responsibility. This approach is believed to be better for such persons than the common practice of attempting to circumvent the usual educational requirements by short-cut concentration on advanced and specialized courses, which are actually preparatory for responsible positions only insofar as they *supplement* broader educational background.

3. Employees who wish to prepare themselves to become Junior Administrative Assistants or to head units concerned with administrative procedures.

## GENERAL ADMINISTRATION

U-3. INTRODUCTION TO PUBLIC ADMINISTRATION    ERWIN C. HANNUM  
*W F 6-7:30 beginning Sept. 30. \$18.*

This course is designed to introduce the student to the elements of public administration. Attention will be devoted to the evolution of administrative organization; organizational types: staff, line, and auxiliary agencies and functions controls of administration; the broadest aspects of personnel selection, classification, training, movement, and relations; budgeting and fiscal control; federal-state relations; administrative legislation and adjudication. The object of the course is to lay a broad foundation for more intensive courses in management.

U-2. LAYMAN'S INTRODUCTION TO PUBLIC LAW    PHILIP M. GLICK  
*Th 6-8 beginning Oct. 1. \$12.*

This course, intended for non-lawyers, will consider the ways in which legal institutions and doctrines—among them, Federalism, constitutionalism, administrative action, judicial review, private property, free contract, policy power, due process, equal protection of law, the commerce power, the war power, separation of powers, power to delegate, and legislative certainty—mold legislation and government programs. Particular attention will be given to the law relating to agriculture, land use, water use, production control, planning, agricultural education, rural rehabilitation, marketing, credit, and conservation of natural resources. Government programs in these fields will be studied as illustrations of the operation of legal institutions and doctrines.

GU-2-2. ADMINISTRATIVE LAW AND PROCEDURE    DR. ASHLEY SELLERS  
*W 6-8 beginning Sept. 30. \$14.*

This course will deal, in a manner less intensively and technically than courses of this nature usually are taught in the law schools, with the following: disposition, delegation, and sub-delegation of governmental powers; limitations upon administrative discretion; regulatory procedures (including hearings) of Federal administrative agencies in general and of the Department of Agriculture in

particular; recent and current proposals for revision of Federal administrative procedure; and judicial review of administrative action.

Prerequisite: Practical experience in a major regulatory activity of the Federal Government or extensive academic training in public administration or public law.

#### GU-1. ADMINISTRATIVE ORGANIZATION

DR. JOHN M. GAUS

*Time to be arranged, beginning about Oct. 15. \$7.*

Dr. Gaus, who is Professor of Regional Planning in the Littauer School of Public Administration at Harvard University, will come to Washington fortnightly to conduct this course.

The lectures and discussions will include the evolution of administrative organization, theory of organization, role of the general staff, responsibility and controls of administration, and relations of technician, administrator, and the public.

#### GU-2. MANAGEMENT PSYCHOLOGY 1943-44.

DR. RENSIS LIKERT

#### GU-2. ORGANIZATIONAL AND PROCEDURAL ANALYSIS

*Spring semester.*

#### GU-1. SCIENTIFIC MANAGEMENT

*Spring semester.*

#### GU-2. FEDERAL-STATE COLLABORATION

*Spring semester.*

#### GU-2. GOVERNMENTAL PUBLIC RELATIONS IN WARTIME

*Tu 8-10 beginning Sept. 29. \$14.*

RUSSELL SMITH

A study of major aspects of the relationship between government and citizens in time of war. Designed especially to acquaint students with efforts of government to extend democratic practices into administrative fields not reached directly by the elective processes. Discussion will cover pre-war development of new administrative devices, including citizen-government committees and new techniques for informing both citizen and administrator of public problems and public action to meet problems; the place of pressure groups in a democracy; wartime measures here and abroad to draw all citizens into the war effort, current administrative devices used by OPA, WPB, and the other war agencies to make full use of citizen capacity, the use of sampling and polling techniques to gauge public opinion, the theory and practice of censorship, problems of keeping people informed without giving "aid and comfort to the enemy"; the postwar problem of maintaining close interplay between citizen and government.

#### N-0. ROUND-TABLE ON SELECTED MANAGEMENT PROBLEMS

*F 6-8 beginning Oct. 2. \$14.*

HENRY H. FARQUHAR, *Chairman*

A series of round-table discussions on practical, everyday administrative and supervisory problems, intended primarily to benefit persons in grade CAF-9 or above by exchange of comments and experience on problems they themselves suggest. As convenient points of departure, five broad discussion areas have been selected, each of which will be initially explored by an outside speaker. Following each introductory session, two sessions will be devoted to discussion and exchange of experience among class members.

Topics and speakers are as follows:

#### PRINCIPLES OF ORGANIZATION AND DELEGATION OF AUTHORITY

Dr. George C. Benson, *Director, Administrative Division, Office of Price Administration.*

#### STANDARDS, PLANNING, SCHEDULES AND CONTROL

Colonel Sanford E. Thompson, *Consultant to Services of Supply, War Department; and President, The Thompson & Lichtner Co., Inc.*

#### MEASUREMENT OF RESULTS—QUALITY, QUANTITY, AND COST

Commander Joseph Pois, *Chief, Administrative Management Section, United States Coast Guard.*

#### PERSONNEL LEADERSHIP AND TRAINING

T. Roy Reid, *Director of Personnel, Department of Agriculture.*

#### EMPLOYEE PARTICIPATION

Eric Nicol, *Liaison Officer, Office of Lend-Lease Administration.*

Although intended as a non-credit course, students who wish to earn credit may, by special arrangements, do so by reading special assignments and preparing a research paper.

Prerequisite: CAF-9 or above, or consent of chairman.

## PERSONNEL ADMINISTRATION

### L-2. PERSONNEL PROCEDURE (See OFFICE SKILLS)

#### U-2. PERSONNEL ADMINISTRATION

ALBERT H. ARONSON

*M 6-8 beginning Sept. 28. \$12.*

This course will deal with the personnel problems which arise when people are associated together in a work situation. It will be designed to acquaint the student with the basic personnel policies and practices which have been found necessary and useful in coping with these problems. Trends in public personnel administration and its relationship to over-all management will be discussed. The course will be helpful to supervisors and administrators who desire a broad understanding of personnel administration and also to students who need foundation for the more specialized courses in the personnel field.

#### G-2. PERSONNEL ADMINISTRATION

LOUIS J. KROEGER

*M 6-8 beginning Sept. 28. \$14.*

This is a graduate course dealing with the same problems and content described in the undergraduate course listed immediately above.

Prerequisite: Bachelor's degree or employment in personnel work at grade CAF-7 or above.

#### U-2. POSITION CLASSIFICATION

ROBERT L. HILL

*F 6-8 beginning Oct. 9. \$12.*

This is an introductory course designed to give the student an understanding of the fundamental concepts of position classification and its uses; the relation of classification to compensation and other phases of personnel administration; the historical background of position classification in the Federal Service; an analysis of the Classification Act of 1923 and its amendments and its relation to other personnel processes; position analysis and factors to be considered in the allocation of positions.

Prerequisite: 60 semester hours of college work or consent of the instructor.

#### G-2. POSITION CLASSIFICATION

DR. O. GLENN STAHL

*M 6-8 beginning Sept. 28. \$14.*

This is a course for graduates. The content is substantially the same as for the undergraduate course described immediately above.

Prerequisite: Bachelor's degree or employment in personnel work at grade CAF-7 or above.

#### GU-2. ADVANCED POSITION CLASSIFICATION

JAMES L. BUCKLEY

*M 6-8 beginning Sept. 28. \$14.*

A detailed study of Federal position classification based primarily on specific cases. Emphasis will be placed on factors that enter into the allocation of positions and the application of such factors in actual and hypothetical classification situations.

Prerequisite: Position Classification or technical classification experience.

#### GU-2. TRAINING TECHNIQUES

C. O. HENDERSON AND

*F 6-8 beginning Oct. 2. \$14.*

DR. LEWIS H. ROHRBAUGH

This course, using the case approach and emphasizing useful training techniques, will concentrate on methods of training public employees on the job or in connection with the job. It will center around the analysis of training needs and the development and application of plans to meet these needs. It is intended for training officers, persons preparing for such positions, and those needing an understanding of the subject but not carrying full-time responsibility in it. Special emphasis will be given such devices as films and other visual aids, narrative materials, staff conferences, the discussion method, institutes, on-the-job training, and related techniques.

#### GU-3. SELECTION AND PLACEMENT

ARTHUR B. MCLEAN

*Tu 6:30-9:30 beginning Sept. 29. \$21.*

The study of recruiting, examination, and certification of employees of the Federal government with special reference to comparable practices in private business and in other government organizations. Placement activities carried on by the agencies themselves, such as interviewing, personnel inquiries, transfers, promotions, and the better use of the probationary period.

#### GU-2. EMPLOYEE RELATIONS

*Spring semester.*

### FINANCIAL ADMINISTRATION

#### GU-2. BUDGETARY AND FINANCIAL ADMINISTRATION:

##### BUDGET FORMULATION

W. A. JUMP AND SPECIALISTS

*Th 6-8 beginning, Oct. 1. \$14.*

This is the first part of an advanced, two-semester program covering the broad phases of budgetary and financial administration in the Federal government. Several officials from bureau and department budget offices, and other budgetary and financial organizations will lecture and lead discussions.

The course deals with the pre-appropriation phases of budgeting, including formulation, review, and Congressional enactment of the Budget. Topics to be discussed include: history, development, and purposes of budgeting in the United States and other countries; Federal budgetary and fiscal policies in relation to the national economy; the role of budgeting in program formulation; the role of bureaus, departments, Bureau of the Budget, the President and Congress in budgeting; budgetary procedures; content of the Budget, the investment and capital outlay budgets; review and analysis of budget estimates; budget justifications; legislative-administrative relationships in budgeting. Each student desiring credit will be expected to write a short paper on some problem relevant to the course.

Prerequisite: Experience in budgetary or financial administration, courses in public administration, or consent of instructor.

GU-2. BUDGETARY AND FINANCIAL ADMINISTRATION:  
BUDGET EXECUTION

W. A. JUMP AND SPECIALISTS

*Spring semester.*

GU-2-2. GOVERNMENTAL PURCHASING

SAMUEL A. SNYDER

*F 6-8 beginning Oct. 2. \$14.*

AND SPECIALISTS

An advanced training course for employees interested in the technique of acquiring goods and services for the government and a refresher course, surveying a broad field, for experienced purchasing officers who want to be brought up to date on the practices, procedure, economics, and law (from a layman's point of view) now controlling governmental purchasing. Lectures, class discussion, and supervised research.

L-1. PURCHASING PROCEDURE (See OFFICE SKILLS).

## ACCOUNTING

L-3. PRINCIPLES OF ACCOUNTING—1st half

WILLIAM H. ROWE, DR. OSWALD NIELSEN, DR. V. W. BENNETT AND G. Y. JARVIS

*Tu-Th 6-7 beginning Sept. 29. Laboratory Tu 7-9 beginning Oct. 6. \$18.*

Elementary principles of accounting; discussion and problems. At the end of the semester students will be prepared to devise the accounting methods necessary for a small business organization, make the necessary entries in the records, draw up statements at the end of the fiscal year, adjust the accounts for accruals, deferred items, depreciation, etc., and close the books.

L-3. PRINCIPLES OF ACCOUNTING—2nd half

JOHN F. MCSHEA AND G. Y. JARVIS

*Tu-Th 6-7 beginning Sept. 29. Laboratory Tu 7-9 beginning Oct. 6. \$18.*

Continuation of first semester covering the more advanced principles of accounting; account classifications; the valuation of assets and depreciation policies; manufacturing accounts; partnership accounts; and corporation accounting, particularly the treatment and interpretation of capital stock, surplus, and reserve accounts.

U-3-3. SECOND YEAR ACCOUNTING

DR. OSWALD NIELSEN

*F 6-9 beginning Oct. 2. \$18.*

Valuation, asset values, liabilities and net worth, allocation of income, and expense to proper fiscal period as part of problem of valuation, deferring expenses, and treatment of unusual losses and gains, profits and dividends and the relationship of funds to reserves.

Prerequisite: First year accounting or equivalent.

L-2. FEDERAL ACCOUNTING PROCEDURE (See OFFICE SKILLS)

U-3. GOVERNMENTAL ACCOUNTING

H. F. SHAMBARGER AND SPECIALISTS

*W 6-9 beginning Sept. 30. \$18.*

A detailed study of appropriation and fund accounting, including the relative parts affecting the administrative agencies, the Treasury, and the General Accounting Office. The relationship between accounting for governmental corporations and administrative agencies will be covered. Special emphasis will be given to the Summary System of Accounts prescribed by Executive Order No. 8512 and the manner in which administrative agencies will be affected by it.

Specialists in their respective fields will assist in the course. The specialists include W. R. Quigley, Chief of Accounts Division, Office of Budget and Finance, Department of Agriculture; Jay L. Chambers, Assistant to Commissioner of Accounts, Treasury Department; and J. J. Somers, Assistant to Director of Finance, Department of Agriculture.

Prerequisite: One year of basic accounting, or Federal Accounting Procedure, or one year of experience with the Federal system of accounting.

### GU-3. COST ACCOUNTING

INSTRUCTOR TO BE ANNOUNCED

*Tu 6:30-9:30 beginning Sept. 29. \$21.*

This course is designed to present a thorough and comprehensive treatment of the principles of cost accounting, together with the methods of their application to specific problems. By means of lectures, textbook study, and problems, full consideration is given to the methods of cost accounting for materials, labor, direct and indirect expenses in their relationship to specific job orders, process and departmental costs, and the control accounts.

Prerequisite: Principles of Accounting.

### GU-2. AUDITING

JOHN J. BACHMANN

*Spring semester.*

### L-2. FEDERAL AUDITING PROCEDURE (See OFFICE SKILLS)

### GU-3. MATHEMATICS OF FINANCE

WILLIAM H. ROWE

*Spring, 1943-44.*

# DEPARTMENT OF OFFICE SKILLS

## DEPARTMENTAL COMMITTEE

JAMES F. GRADY, A.B., *Director, Domestic Division, Recruitment and Manning Organization, War Shipping Administration; former Correspondence Counselor, Department of Agriculture*

HENRY A. DONOVAN, *Assistant Chief, Bureau of Agricultural Chemistry and Engineering*

CARL E. HERRICK, A.B., *Chief, Division of Personnel Relations and Safety, Office of Personnel*

JOHN S. LUCAS, *Assistant Chief, Office of Plant and Operations*

WILLYE A. SMITH, *Office of Personnel*

The courses described under Office Management and Clerical-Administrative Procedures are closely related to those offered in the Department of Public Administration and are an integral part of the program leading to the Certified Statement of Accomplishment in Administrative Procedures (see Department of Public Administration for details.) They are practical, how-to-do-it courses chiefly of interest to persons in grade CAF-7 positions, or below, who are either working with these procedures or who hope to train themselves for such positions, or positions requiring some familiarity with more than one of these procedural subjects (e.g., administrative assistants and head clerks).

## OFFICE MANAGEMENT

### L-2. OFFICE MANAGEMENT

DANIEL M. BRAUM AND SPECIALISTS

*F 6-8 beginning Oct. 2. \$12.*

This course will include office layout, office housekeeping methods, formulation of office policy, organization of communications and records, work planning and operational analysis, utilization of available facilities, care and operation of office equipment, employee orientation and supervisory techniques, methods of securing employee participation, work evaluation and employee rating.

Several of the major topics will be discussed by government officials brought in because of their specialized knowledge of various aspects of office management. Among those who will participate are John Lucas, Assistant Chief, Office of Plant and Operations; Mrs. M. C. H. Niles, author of *Middle Management*; and L. E. Donaldson, Chief of the Division of Communications, Office of Plant and Operations.

## CLERICAL-ADMINISTRATIVE PROCEDURES

### L-2. FEDERAL AUDITING PROCEDURE

CAREY G. CRUIKSHANK

*W 6-8 beginning Oct. 7. \$12.*

AND FRED J. KYTTLE

This short, intensive course is designed particularly to train audit clerks drawn from among employees now working in the lower grades as clerks, typists, machine operators, etc., and also to assist audit clerks in their present and prospective positions. It embraces explanations of, discussions on, and practice

work with the most important types of government vouchers and covers certain related procedures and documents. A manual is used which outlines in detail the various procedures.

The course covers general basic principles and definitions of terms; use of standard forms involved; General Accounting Office exceptions, and preparation of replies thereto; administrative suspensions and disallowances; application of statutes, regulations and the Comptroller General's decisions to auditing; special correspondence required in connection with such work; claims and adjustments; purchase order procedures; tax exemption; letters of authorization and travel authority; per diem allowances and computations; methods of travel; and the actual audit of Standard Form 1012 "Reimbursement" vouchers and Standard Form 1034 "Purchase" vouchers.

*Note: Persons who want a short, sped-up approach limited to minimum requirements should take this course. Persons who want more thorough training and a more comprehensive coverage of auditing procedures should take the full-year course described immediately below.*

## L-2-2. AUDITING PROCEDURE

CAREY G. CRUIKSHANK

*M 6-8 beginning Sept. 28. \$12.*

Similar to the course above but more complete and thorough in treatment of the subject. This course is designed to assist audit clerks in their present and prospective positions and to enable government employees working in the lower grades as clerks, typists, etc., to fit themselves for more responsible and remunerative positions. It embraces explanations of, discussions on, and practice work with all types of government vouchers and related documents. A manual is used which outlines in detail all the various procedures. During the first semester, the course covers general principles and definition of terms; use of Standard Forms involved; purchase vouchers; claims and adjustments; General Accounting Office exceptions; formal and informal contracts; relation of procurement to auditing; tax exemption; transportation vouchers; suspensions and disallowances on all types of vouchers.

## L-2. FEDERAL ACCOUNTING PROCEDURE

WILLIAM D. PATRICK AND

*Section I—Tu 6-8 beginning Oct. 6.*

ALBERT C. CREW

*Section II—F 6-8 beginning Oct. 2. \$12.*

INDICATE SECTION WHEN REGISTERING.

This course is designed particularly to train accounting clerks through instruction of employees now working in lower grades and also to assist accounting clerks in their present and prospective positions. It embraces explanation of, discussion on, and practice work with the basic ledgers (allotment ledger, objective classification ledger, and general ledger) maintained in connection with funds made available to Federal agencies. Appropriation, apportionment, allotment, disbursement, collection, and reporting processes will be discussed and the relationship between administrative accounts and the accounts kept by the Treasury Department and the General Accounting Office explained. (A more advanced course, Governmental Accounting, is offered in the Department of Public Administration.)

## L-1. PURCHASING PROCEDURE

SAMUEL A. SNYDER

*W 6-7 beginning Sept. 30. \$6.*

An elementary course designed to explain methods and procedures of government purchasing. The course will cover the entire phase of procurement from the inception of the need to the receipt of the materials and payment. Topics for discussion will be: requisitions, General Schedule of Supply contracts, open market and emergency purchases, government warehouses and stores, purchase orders, vouchers, inter-bureau transfers, and purchase contracts. Ample oppor-

tunity will be afforded class members for questions and class discussion. (A more advanced course, Governmental Purchasing, is offered in the Department of Public Administration.)

#### L-2. PERSONNEL PROCEDURE

CLAUDE M. CHILSON

*F 6-8 beginning Oct. 2. \$12.*

This course will deal with the regulations, details, and paper work involved in the processing of such personnel actions as: requests for certification; appointments, changes in status, reinstatements, and transfers under War Service Regulations; recommendations for classification under the Ramspeck Act and Executive Orders; within-grade salary advancements under the Mead-Ramspeck Act and Executive Orders; demotions and removals due to "Fair" and "Unsatisfactory" efficiency ratings; preparation of separation registers; preparation of efficiency ratings; and leave accounting.

#### L-2. COMMUNICATIONS AND RECORDS MANAGEMENT

L. E. DONALDSON, WILLIAM MULLER AND CHARLES T. SMITH

*Tu-F 6-7:30 beginning Sept. 29 and continuing for 24 sessions. \$12.*

Mails, files, and communications procedures. The course will embrace instruction in (1) communications, including mail handling, telegrams, messenger service; (2) records management, including planning of procedure in records units, subject filing, classification techniques, briefing and cross indexing, sorting and preparation of material, folder and guide arrangement, retirement of material to inactive status, searching, tickler systems, arrangement of offices, equipment and filing materials.

### ENGLISH FOR LETTERS AND REPORTS

#### L-2. PRACTICAL ENGLISH USAGE

RUSSELL SMITH

*Tu 6-8 beginning Sept. 29. \$12.*

This course will enable the student through practice to master the fundamentals of correct English. Troublesome problems of English usage, sentence structure, choice of words, style, and grammar, will be studied as aids to clear and forceful writing of letters, memoranda, and reports.

#### N-0. VOCABULARY BUILDING

SALLIE M. PEASE

*Th 6-8 beginning Oct. 1. \$12.*

A course designed to help writers and speakers to express their ideas clearly and attractively. It embraces word study and selection, diacritical markings, synonyms and antonyms, prefixes and suffixes, usage exercises, and other means of developing a broad and useful command of words.

#### L-2. GOVERNMENT LETTER WRITING.

INSTRUCTOR TO BE ANNOUNCED

*Tu 6-8 beginning Sept. 29. \$12.*

The writing of Government letters from the organization of subject matter to the language of the letter, paragraphing, construction of effective sentences, and correct usage. Vocabulary building. Methods for improving expression. Development and application of appraisal standards. Discussion of the problems involved in dictating and reviewing correspondence and supervising letter writers from the standpoint of the stenographer, dictator, reviewer, and supervisor.

#### L-2. WORKSHOP IN LETTER AND REPORT WRITING

*Spring semester.*

## SECRETARIAL PRACTICES

### N-0. SECRETARIAL PRACTICES

LOWELL HATTERY

*Tu 6-8 beginning Sept. 29. \$12.*

Principles and methods of secretarial practices, developed by lecture, discussion, and consultation with experts, to qualify secretaries and stenographers to do better and more responsible work. Part of each session will be devoted to discussion of actual problems and helpful suggestions presented by members of the class.

Prerequisite: Stenographic experience or consent of instructor.

### N-0. ADVANCED SECRETARIAL PRACTICES

ALICE COFFMAN

*W 6-8 beginning Sept. 30. \$12.*

This course will emphasize the techniques of effective performance of the non-stenographic duties and responsibilities of the secretary; the personal qualities necessary for the private secretary; the amenities of the vocation; and the relation of the principles of secretarial work to office organization. Classroom discussions will be supplemented by actual secretarial practice.

Prerequisite: "Secretarial Practices" or equivalent.

## SHORTHAND

### N-0. BEGINNING GREGG (FUNCTIONAL)

EARL P. STRONG

*Section I—M-Tu-Th 6-7 beginning Sept. 28.*

AND MILDRED J. STRONG

*Section II—M-Tu-Th 7-8 beginning Sept. 28. \$18.*

INDICATE SECTION WHEN REGISTERING.

The course is organized and taught on the basis of standards which should enable the completing student to read at a speed of 100 words a minute and write at from 80 to 100 words a minute. It will cover the complete system of Gregg shorthand by use of the functional method. It will continue for sixteen weeks, covering eighty lessons. This is a course for persons who are genuinely and seriously interested in learning shorthand quickly and effectively. It is limited to Federal employees who have a working knowledge of typing.

### N-0. INTERMEDIATE GREGG (FUNCTIONAL)

EARL P. STRONG

*Section I—M-Tu-Th 7-8 beginning Sept. 28.*

*Section II—M-Tu-Th 8-9 beginning Sept. 28. \$18.*

INDICATE SECTION WHEN REGISTERING.

This course, using the functional method, is intended for those who have completed the principles of Gregg shorthand and wish to develop speed in taking dictation. It may well serve as a review or refresher course for those who have not used shorthand recently and wish to reacquaint themselves with principles and to develop some facility in writing. Dictation speeds of from 80 to 120 words per minute will be developed.

NOTE: Intermediate Gregg (Functional) and Gregg, 70 to 100 Words differ chiefly in method used. Students who began with the functional method will probably wish to continue with it; students who did not begin with that method may choose the course thought to be most useful in terms of individual needs.

### N-0. GREGG, 70 to 100 WORDS

ALICE COFFMAN

*Tu-Th 6-7 beginning Sept. 29. \$12.*

This course is designed for those who desire a review of theory in Gregg shorthand with dictation from 70 to 100 words a minute. Special attention

will be given to the acquisition of a large vocabulary of Gregg outlines. Dictation will be graded from business letters, the Congressional Record, and legal and technical matter relevant to the work in government offices.

N-0. GREGG, 100 to 130 WORDS

CLARA E. RICHTER

*M-W 6-7 beginning Sept. 28. \$12.*

This speed, actual word count, is the equivalent of 100 to 150 words by the standard word count formerly used. This course is designed to develop speed in the more technical vocabularies. Subject matter will be selected and graded from the publications of the various bureaus in which members of the class are employed. Students who are primarily interested in dictation, such as stenotypists, may also enroll.

N-0. PITMAN, 70 to 100 WORDS

LOUISE C. BARRY

*Tu 6-8 beginning Sept. 29. \$12.*

A course designed for those who wish to review the principles of Pitmanic shorthand with dictation from 70 to 100 words per minute. Special emphasis will be placed on the acquisition of speed and accuracy by means of (1) the fundamental principles of phrasing, as determined by grammatical construction and Pitmanic theory; (2) the use of brief forms of constantly recurring and fundamental words; (3) the attainment of a stenographic vocabulary suitable for general business and governmental work; (4) the development of increased accuracy and precision in the formation of outlines to attain instant legibility.

N-0. PITMAN, 100 to 130 WORDS

LOUISE C. BARRY

*F 6-8 beginning Oct. 2. \$12.*

(Students who show ability to exceed the 130-word speed will be given ample opportunity.) The art and theory of phraseology in the acquisition of speed; the use of the ticks; the theory and practice of expert expedients including the principles of omission, fictitious primitives, alternatives and consecutives, and in general the technique and style of rapid Pitmanic shorthand. The dictation material will be the records of committee hearings. A conference and clinical meeting will be held two hours each week from 6 to 8 on Fridays, supplemented by practice exercises at times to be arranged convenient to the members of the class.

N-0. REPORTING, 130 to 150 WORDS

CLARA E. RICHTER

*M-W 7-8 beginning Sept. 28. \$12.*

The speed is based on actual word count and is the equivalent of 150 to 175, standard word count. This is a continuation of the 100 to 130 word class with special emphasis on reporting technique.

N-0. ADVANCED REPORTING, 150 WORDS AND UP

CLARA E. RICHTER

*Spring semester.*

N-0. SHORTHAND IN SPANISH

GRACE M. BAUER

*Tu 6-8 beginning Sept. 29. \$12.*

This is an elementary course designed to cover the basic principles and outlines of the Spanish Gregg Shorthand Manual and to provide progressive dictation in Spanish through supplemental exercises and business correspondence, with the emphasis on accuracy.

Prerequisite: Knowledge of Spanish.

N-0. ADVANCED SHORTHAND IN SPANISH

GRACE M. BAUER

*Spring semester.*

## SPECIAL COURSES

### N-0. THE CLASSICS (St. John's College Program)

*Tu 8-10 beginning Sept. 29. Limited to 25 students. Special fee \$15.*

This seminar in classics dealing with ideas basic to the understanding of the social process in terms of the state and of social and economic institutions is offered in cooperation with St. John's College. The method of this course will be the dialectic of the seminar, in which the book read will be the common ground for group discussion.

The list of books for the course and the name of the discussion leader will be announced soon and will be available at the Office of the Graduate School.

### G. EXTENSION THESIS

MEREDITH C. WILSON

*Registration fee \$3.*

An opportunity will be afforded to qualified persons who desire to undertake a study of an agricultural extension problem and submit a thesis. The amount of credit, to be determined by a thesis committee, will be based upon the nature of the problem, amount of work, and quality of the thesis.

NOTE: *The other courses usually offered in Extension Education are deferred until further notice.*

### L-1-1. INTERIOR DECORATION

HARRIET GARRELS

*W 6-7 beginning Sept. 30. \$6.*

The first semester includes color, principles of arrangement, walls, floor coverings, window treatments, and lighting. The second semester includes the study of furniture (modern and antique), the most popular English and American period styles, including modern accessories; pictures; and flower arrangement.

### U-2. MEXICAN CULTURE

EDMUNDO LASSALLE

*W 6-8 beginning Sept. 30. \$12.*

A survey of the architecture, painting, decorative and popular arts of Mexico, with emphasis on Indian attributes. Precortesian culture; architecture and painting in the sixteenth and seventeenth centuries; the era of the great cathedrals; nineteenth century neo-classicism; contemporary painting and its world importance; the Mexican artistic renaissance; revival of Indian crafts. This course could also serve as an interpretation of Latin American culture as a whole.

### N-0. PERSONAL DEVELOPMENT

HESTER BEALL PROVENSEN

*W 6-8 beginning Sept. 30. \$12.*

Discovery and development of the potentialities of each student. Poise, confidence, appearance, make-up, dress and color sense, art of conversation, cultivation of wider range of interest, and curiosity. Actual social situations created and discussed. Conferences, guest speakers.

## UTILITY ADMINISTRATION AND REGULATION

These courses are offered to meet the special needs of a large group of Federal employees. For their convenience the classes will be held in buildings of the Federal Power Commission, 18th and Pennsylvania Ave., N.W.

Information about the technical content of the courses may be obtained from Dr. Fayette S. Warner. Call Branch 274, Federal Power Commission.

### GU-2. PUBLIC POWER

JUDSON KING, DR. H. W. BLALOCK

*Tu 7:30-9:30 beginning Sept. 29. \$14.*

AND DR. C. A. DUVAL

General review of the development and operations of the publicly owned electric utilities in America. Both historical and statistical analyses of the numerous problems of the publicly owned utilities, involving organization, financing, operations, rates, sales, costs, legal or political obstacles, and "yardsticks." The development and operations of the following publicly owned electric utilities: municipal, district, cooperative, State, and Federal.

### GU-3. WATER POWER ENGINEERING

KENNETH W. ROSS

*M-W 6-7:30 beginning Sept. 28. (18 weeks) \$21.*

This course will be informative in the fundamentals of engineering and their application to the planning and construction of dams, reservoirs, and power plants in the development of river basins in the United States. Included will be a study of river flow, regulation by reservoirs, water power estimates, hydraulic turbines and plant arrangement. Important rivers and projects will be used as illustrative examples in the practical application of fundamental principles and procedures.

Prerequisite for credit: Mathematics and physics.

### G-2-2. ELECTRIC UTILITY ENGINEERING

J. M. MORGAN AND

*Tu 7:30-9:30 beginning Sept. 29. \$14.*

DR. J. A. JESSEL

The fundamentals of electric utility engineering and their practical application to generating, transmitting, and distributing electric energy by electric utilities. Designed for engineers, engineering aids, lawyers, accountants and others who desire a broader understanding of the basic principles of electric utility engineering as applied to operating electric utilities. The subjects covered are: A general description of production, transmission, and distribution plants of electric utility, including each of the units of the property and an explanation of its functions; lectures and case studies in design and operation of electric generating stations, transmission lines and substations, and distribution substations, feeders, transformers, and services; discussions of practices followed by electric utilities in serving different classes of customers.

### GU-2. ELECTRIC AND GAS UTILITY RATES

H. ZINDER AND

*Th 7:30-9:30 beginning Sept. 29. \$14.*

W. E. CAINE

Principles and practice of rate design; customer and service classifications; engineering and economic factors in rates and rate contract forms and provisions; discussion of allocation of costs; problems in determination of rate discrimination; review of problems of rate base, operating expenses, depreciation and rate of return.

U-3-3. ORIGINAL COST ACCOUNTING FOR ELECTRIC AND GAS UTILITIES K. L. SMITH AND R. C. RAINWATER

M 7:30-10 beginning Sept. 28. (18 weeks) \$18.

Application of principles and procedures in accounting for utility plant of electric and gas utilities on the basis of original cost, including a brief review of the historical development leading up to the adoption by regulatory authorities of the basis of cost of property "to the person first devoting it to a public service"; the methods of determining original cost of utility plant when such property has passed through one or more ownerships, of the accounting treatment for write-ups and other adjustments arising from the establishment of original cost, of the accounting requirements of regulatory bodies relative to plant additions and retirements, of the principal features of "perpetual inventory" or continuing property record installations; and a thorough study of the problem of depreciation in connection with original cost accounting.

GU-3-3. PUBLIC UTILITY EVIDENCE LAMBERT McALLISTER AND WILLARD GATCHELL  
W 7:30-10 beginning Sept. 30. (18 weeks) \$21.

Principles and methods used in planning electric and gas formal cases; in supervising the work of witnesses; in qualifying, examining and cross-examining witnesses; in using evidence and in the preparation of briefs; in conducting examinations of utility plants and operations; and in collecting and organizing data for the purpose of preparing and presenting exhibits on engineering, economic, and legal aspects of formal cases.

GU-2. MANUFACTURING INDUSTRIES AND THEIR USE OF ENERGY DR. FAYETTE S. WARNER AND S. H. THOMPSON

M 7:30-9:30 beginning Sept. 28. \$14.

This course is designed to give those who are interested in the operations of business a knowledge of the economics of manufacturing and the use of power and energy in production. Industries are analyzed to discover the nature and the causes of their growth, decline, shifts in location, seasonal variations in production, difficulties of production control, investment in plant, shifts in raw materials, changes in processes of production, competition between companies or with other industries, industrial location and the economic transportation for manufacture and distribution with regard to the conversion of raw materials into basic, semi-finished and finished products in several of the various basic extracting and manufacturing industries. The industries will include coal, petroleum, lumber and forest products, iron and steel, aluminum, copper, leather, rubber, clay products, textiles, meat packing and various food products.

# FACULTY

## FIRST SEMESTER

J. K. ABLEITER, B.S., M.S., Wisconsin. Senior Soil Technologist, Bureau of Plant Industry. Taught in North Dakota State Agricultural College. (Physical Sciences)

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